



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

February 7, 2000

MEMORANDUM

SUBJECT: Disulfoton: Acute and Chronic Dietary Risk Assessment; Chemical No. 032501;
MRIDs 44821701 & 44821702; DP Barcode D256278

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THROUGH: F. B. Suhre, Branch Senior Scientist
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TO: David Anderson, Risk Assessor
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Action Requested

In support of reregistration of Disulfoton, conduct chronic and acute dietary exposure assessments including all uses, both those being supported and not supported for reregistration. Use all available data, including usage, monitoring and processing information to conduct tier 3 level refined analyses.

Note: A previous draft of this document was dated June 25, 1999. The primary difference in this version is the removal of a 3x FQPA factor from the estimation of reference doses for dietary risk.

Background

Disulfoton (O,O-diethyl S-[2-(ethylthio)ethyl] phosphorodithioate) is a systemic acaricide and insecticide registered by Bayer Corporation under the trade name Di-Syston®. Disulfoton is currently registered for soil and foliar applications to various food and feed commodities.

Screening level dietary risk assessments, which were performed as part of the Health Effects Division Reregistration Eligibility Decision (HED RED) Document for Disulfoton (D. Anderson, 10/29/98, D237133), indicated the need to refine estimates of anticipated residues in order to determine if dietary exposure was at an acceptable level. The Tier 1 acute dietary risk, which was calculated using reassessed tolerance-level residues and 100% crop treated, ranged from 8 to 15 times the RfD at the 95th percentile. The Chronic dietary risks were based on reassessed tolerance-level residues for all commodities (except potatoes, meat and milk) and percent crop treated data from BEAD (Steven Nako, 6/18/97). Anticipated residues for potato commodities were based on average field trial data. For livestock commodities, anticipated residues were based on transfer ratios from livestock feeding studies and livestock dietary burdens adjusted for percent crop treated (John Abbotts, 9/17/97, D235464). The estimated chronic dietary risks exceeded the Agency's RfD for the U.S. population and all population subgroups except nursing infants (<1 year old) where exposure was 80% of the RfD.

In response to the RED draft, Bayer Corporation has submitted refined acute and chronic dietary exposure analyses (MRIDs 44821701 & 44821702). These submissions are being used along with the most recent HED consideration of anticipated residues (J. Abbotts, 9/17/98, D235464) to derive the current assessment.

Executive Summary

Refined dietary exposure assessments for both chronic and acute risk are provided in this document and its attachments. In the chronic dietary exposure analysis the highest exposure estimate for any population subgroup was 0.000005 mg/kg body wt./day for children 1-6 years. This represent 3.5 % of the cPAD. In the acute dietary exposure analysis the highest exposure estimate for any population subgroup at the 99.9th percentile was 0.000239 mg/kg body wt./day for children 1-6 years. This represents 9.6% of the aPAD and a margin of exposure (MOE) of 1044.

These analyses represent Tier 3 level refinements of dietary exposure and reflect recent efforts by HED to refine anticipated residue assessments to better approximate residues occurring in the diet. All available monitoring data were considered in addition to field trial data. Percent crop treated information was used, either as a predictor of the probability of residues occurring on individual samples or in estimating average residues in samples that could be blended to some degree. All available processing studies were evaluated and factors for cooking, canning, and other food processing were used to adjust anticipated residues. Extensive sensitivity analyses or critical commodity assessments were not performed, primarily because of the low exposures.

Toxicological Information

The mode of action of disulfoton is inhibition of cholinesterase. The Health Effect Division (HED) Hazard Identification Assessment Review Committee (HIARC), evaluated the toxicity data base for disulfoton (D, Anderson, Disulfoton: Report of the Hazard Identification Assessment Review Committee, 4/23/98) and established an acute reference dose (RfD) and a

chronic RfD. The HED Food Quality Protection Act (FQPA) Safety Factor Committee evaluated the toxicity data and exposure data (1/19/00) and determined that the 10X uncertainty (UF) factor required by FQPA under certain circumstances should be removed. Thus, a total UF of 100 is used for food residues and residential exposure in the assessment of disulfoton (10X for intraspecies variation and 10X for interspecies variation).

Table 1 shows acute and chronic endpoints, RfDs and required MOEs used in these assessments.

Table 1. The doses and toxicological endpoints selected for acute dietary and chronic dietary exposure				
Exposure scenario	NOEL ¹	Endpoint	Study	Uncertainty Factor
Acute dietary	0.25 mg/kg/day	Cholinesterase/clinical signs	Acute neurotox/rat (81-8)	100
Acute dietary RfD = 0.0025 mg/kg (FQPA population adjusted dose)				
Chronic dietary	0.013 mg/kg/day	Cholinesterase	Chronic/Dog (83-1)	100
Chronic dietary RfD = 0.00013 mg/kg/day (FQPA population adjusted dose)				

¹ = No Observed Effect Level.

Residue Information

Reregistration background

Disulfoton is a List A FIFRA reregistration chemical and was the subject of a Reregistration Standard Guidance Document dated 12/84. An update to the Residue Chemistry Chapter of the Disulfoton Reregistration Standard was issued on 1/25/91. The Residue Chemistry Chapter of the Disulfoton Reregistration Eligibility Decision (RED) was completed on 1/9/98 and reflects the evaluation of all of the submissions made in response to the earlier reregistration documents.

Tolerances

Tolerances are established for combined residues of the insecticide disulfoton, O,O-diethyl S-[2-(ethylthio)ethyl]phosphorodithioate, and its cholinesterase-inhibiting metabolites, calculated as demeton, in or on numerous plant commodities (40 CFR 180.183). See Table 2 for chemical names of residues of concern.

Table 2. Chemical Names of Identified Disulfoton Tolerance Residues.

Common Name Chemical Name	Common Name Chemical Name
I. Disulfoton O,O-diethyl S-[2-(ethylthio)ethyl]phosphorodithioate	IV. Disulfoton oxygen analog; Demeton-S O,O-diethyl S-[2-(ethylthio)-ethyl]phosphorothioate
II. Disulfoton sulfoxide O,O-diethyl S-[2-(ethylsulfinyl)ethyl]phosphorodithioate	V. Disulfoton oxygen analog sulfoxide O,O-diethyl S-[2-(ethylsulfinyl)-ethyl]phosphorothioate
III. Disulfoton sulfone O,O-diethyl S-[2-(ethylsulfonyl)ethyl]-phosphorodithioate	VI. Disulfoton oxygen analog sulfone O,O-diethyl S-[2-(ethylsulfonyl)-ethyl]phosphorothioate

Tolerances are not established for livestock commodities; however, there is a pending petition (PP 7F1895). Residue chemistry review of the data resulted in recommended tolerances of 0.05 ppm for red meat commodities and 0.01 ppm for milk. The recommendation was based on a scenario that livestock could consume feed containing disulfoton at levels as high as of 5 ppm (PP 7F1895, 6/27/77, M. Nelson; J. Abbotts, 12/5/97, D241353). In the same reviews it was concluded that, based on a maximum dietary burden of 0.75 ppm, residues were not likely to be detected in poultry commodities; therefore, tolerances were not recommended for poultry and eggs.

Residues of Concern in Dietary Exposure Assessments

The HED Metabolism Committee determined that the residues to be regulated in plant commodities are disulfoton, disulfoton oxygenated analog and their sulfoxides and sulfones, provided the registrant can demonstrate the absence of phosphorus in significant unknown metabolites (Metabolism Committee Decision Memo, D235406, 5/1/97, J. Abbotts). At the time of reregistration, the tolerance expression should include full chemical names of the residues to be regulated and should be revised to state that residues are to be calculated as disulfoton..

The HED Metabolism Committee previously considered livestock metabolism data. Based on studies in ruminants and poultry, the committee determined that disulfoton, disulfoton oxygenated analog and their sulfoxides and sulfones were the residues of concern although only the parent and sulfonic acid metabolites, which are not cholinesterase inhibitors, were identified. (Metabolism Committee Decision Memo, 8/17/89, R.D. Schmitt).

Analytical Methodology

The existing analytical methods for enforcement and data collection involve oxidation of disulfoton and its metabolites to the corresponding sulfone. Thus, a typical residue report from field trial data contains values for combined residues of disulfoton sulfone and disulfoton oxygen analog (Demeton-S) sulfone, i.e. two peaks from GLC analyses represent disulfoton and its five metabolites of concern. On the other hand, FDA and USDA/PDP do not include an oxidation step in their analyses and report results for disulfoton and each of its metabolites individually.

Monitoring Data

USDA Pesticide Data Program (PDP) has surveyed pesticide residues in selected food items since 1991. Data are available for disulfoton and its metabolites up through 1998 but in this assessment we will only consider the years 1994 through 1997. The 1998 data have not been released to the public by USDA and the data from years prior to 1994 are of limited value because of the reporting procedures for samples with no detectable residues. The PDP program has reported analyses for disulfoton and its 5 metabolites inconsistently. Disulfoton is generally reported from all participating laboratories but reports for the metabolites vary from one laboratory to the other and change within laboratories also.

FDA monitoring data for disulfoton and the 5 metabolites of concern were considered for the years 1992 through 1998. Data were combined for all years and included only domestic surveillance data. Results from monitoring data are not generally used unless at least 100 samples have been analyzed. The limits of detection are not reported individually for each pesticide/commodity pair so an assumption is made based on knowledge of the sensitivity of multiresidue methods used and the lowest values reported for detectable samples. For purposes of this assessment the limit of detection for disulfoton and metabolites is assumed to be 0.0015 ppm. For demeton and its metabolites an LOD of 0.003 ppm is assumed.

An important issue in interpretation of monitoring data is that disulfoton and its 5 metabolites are all reported individually. In cases where not all of the metabolites are analyzed on a given sample or some or all of the metabolites are reported as nondetectable, the choice of a method for estimation of the sum of 6 residues is problematic. The common procedure of assigning a value of $\frac{1}{2}$ LOD for all nondetectable residues has the potential for large errors for disulfoton as this would require adding together six assumptions of $\frac{1}{2}$ LOD. The registrant has proposed a disulfoton monitoring data transformation based on information from metabolism profiles for soybeans, kale, lettuce, potato, and wheat. The metabolism studies would represent closely related crops and a sentinel metabolite would be chosen as an indicator of the presence of total residue. Based on the metabolism studies, a ratio would be derived between total regulated metabolites and the sentinel metabolite. The resulting factor would be used to estimate total residue in a sample base on the sentinel metabolite. For example, if demeton-S is chosen as a sentinel metabolite for potatoes then a ratio of total metabolite to the sulfone would be $2.62/1.08 = 2.4$. Therefore, a monitoring result that was nondetectable for any residues in potatoes would be assumed to contain $\frac{1}{2}$ LOD of the sulfone and total residues of all metabolites would be estimated as $(2.4) * (\frac{1}{2} \text{ LOD})$. Other transformations could be devised along similar lines of reasoning. We have examined the metabolism studies and compared them to available monitoring data on disulfoton and its metabolites. A common feature of the metabolism studies is that disulfoton is extensively metabolized to polar unknowns and neither disulfoton nor demeton-S is identified in the radioactive residue. The monitoring data are somewhat consistent with the metabolism data in that disulfoton and demeton-S are not detectable, demeton-S sulfone is the predominate residue detected, there are some detections of disulfoton sulfone, and few hits for any sulfoxides. In the FDA surveillance monitoring for the years 1992 through 1998 there were only 26 samples with detectable residues of concern. Of these, 13 were reported as only demeton-

S sulfone, 9 were reported to contain both sulfones, 3 were reported to contain only disulfoton sulfone and 1 was reported with disulfoton sulfone + sulfoxide. The relative ratios of the compounds in which two were reported are in general agreement with the metabolism studies but vary from one sample to another. It is our conclusion that there is not enough data available at this time to refine this transformation to the point of using a sentinel metabolite to calculate total residues. However, it does seem reasonable to assume for nondetectable samples that the assumption of ½ LOD levels for the combined sulfones and sulfoxides would be a conservative refinement of residue estimates that would not underestimate dietary exposure. That is, an estimation of total residues of disulfoton will be estimated assuming zero level residue for disulfoton and demeton-S, and assuming ½ LOD for the other 4 compounds of interest unless they are reported in the sample. In those cases the actual reported residues for those metabolite will be entered in the sum.

Table 3. A summary of Available Plant Metabolism Studies on Disulfoton.

Crop	Matrix	% of Total Radioactivity From Metabolism Studies						
		disulfoton	demeton-S	demeton-S sulfoxide	demeton-S sulfone	disulfoton sulfoxide	disulfoton sulfone	total regulated metabolites
Soybean	seeds	0	0	≤ 0.72	≤ 0.72	≤ 0.72	≤ 0.72	2.88
Potatoes	tubers	0	0	1.08	1.08	≤ 0.27	≤ 0.27	2.62
Wheat	seeds	0	0	1.21	0.4	1.21	1.21	4.03
Lettuce	leaves	0	0	5.88	23	5.08	26.2	60.16
Kale	leaves	0	0	0	14.5	1.5	0	16

Percent Crop Treated Data

A quantitative usage analysis was provided by BEAD based on data years 1987-98 (Steven M. Nako, QUA date: May 5, 1999). Data sources included USDA/NASS (1990-97), California EPA, Department of Pesticide Regulation (1993-96), National Center for Food and Agricultural Policy (1992), and various proprietary data sources including Doane (1987-98), Maritz, and Mike Buckley (1994-97).

Contribution of potential residues from crops with import tolerances was based on information provided by Bayer Corporation (MRIDs 44821701 & 44821702). Disulfoton tolerances, but no or limited domestic use, exist for coffee, rice, and hops. Segmentation of the US import supply from the domestic supply for these food crops was described and documented by the registrant. As a default assumption, all imports from countries approved for disulfoton use on coffee, hops, and rice were included, and of these imports 100% were assumed treated with disulfoton. Additionally, only Argentina has a registration for disulfoton on hops but in the submitted analysis 100% of the imported hops and imported beer (from all countries) was considered as treated. The

registrant's proposal for these crops is acceptable and, in the absence of more refined data, will be used in estimating residues on these crops.

Processing Factors

The registrant has included processing information in their most recent refined dietary assessments (explained and documented in MRIDs 44821701 & 44821702). These factors were based on several Bayer reports as well as published articles from the scientific literature and were used by Bayer to adjust residue values derived from field trial data. We have reviewed these reports for this assessment and accept most of them as estimates that, if used with the proper residue data, would give more refined estimates without underestimating exposure. The following Table summarizes the proposes factors as well as other factors available from reregistration submissions. The registrant has proposed several block processing factors combining generic and specific factors for each food form. We have reviewed these factors and modified the approach for the current assessment. The registrant proposed combining all factors for a given food. For example, in the case of a canned/cooked vegetable, generic factors for washing, cooking, and canning were all combined. We conclude that the information from which these factors was derived in too limited at this time to use them this extensively. In the current assessment a more conservative approach was taken. The primary difference from the registrant's approach is that only one heat-related factor is used per food form, i.e., cooking and canning factor are not combined. We also do not use the washing factor proposed by the registrant. All processing factors used in the DEEM input for this are listed in Table 4.

Table 4. Disulfoton Processing Factors Summary

Category	Processing Factor proposed by Registrant	Processing Factor acceptable for current analysis	Data Sources¹	Comments and Agency Reviews
Beef-dried	-	1.92	DEEM Default	
Coffee	0.33	0.33	MRID 44248008	J. Abbotts, 7/8/97, D235171
Corn grain sugar	not supported	1.5	DEEM Default	
Corn grain molasses	not supported	1.5	DEEM Default	
Corn grain bran	not supported	1	DEEM Default	
Corn grain Endosperm	not supported	0.24	MRID 44248009	J. Abbotts, 5/22/97, D235168
Corn grain Oil	not supported	0.24	MRID 44248009	J. Abbotts, 5/22/97, D235168

Category	Processing Factor proposed by Registrant	Processing Factor acceptable for current analysis	Data Sources ¹	Comments and Agency Reviews
Cottonseed Meal	Direct Residues used	seed residue	Bayer Reports 33227, 33228, 91487 (MRID 40204304, 44248006)	J. Abbotts, 7/8/97, D235171
Cottonseed Oil	1	1	MRID 44248006	J. Abbotts, 7/8/97, D235171
Generic Washing	0.28	None	Dikshit et al., 1987; Bayer Reports 11651, 11653	<p>Dikshit, et.al: washing followed by cooking resulted in 80 & 90% reduction of metasystox in <u>zero day residues</u> on cabbage; similarly resulted in 80 & 86% reduction in fresh beans. Not an acceptable washing study for <u>systemic insecticide</u>.</p> <p>Bayer reports: washing carrots harvested 181 & 322 days after soil treatment reduced residues by 0.25x & 0.45x. Not acceptable; not enough information. Residues were very high (6.5 ppm) even after 322 days.</p>
Generic Canning	0.22	0.22	Bayer Report 4882	Based on reduction of residues in pureed spinach during canning process. May be used as adjustment factor for similar foods.

Category	Processing Factor proposed by Registrant	Processing Factor acceptable for current analysis	Data Sources ¹	Comments and Agency Reviews
Generic Home Boiling	0.92	0.92	Dikshit et al., 1987	Several studies show thermal degradation but it is difficult to separate heat effects from washing away of residues. The study by Dikshit, et al. is of limited value but is acceptable for a conservative estimate such as used here. The value of 0.92 is the mean of reductions reported for cabbage and fresh beans that can be attributed to thermal effects.
Generic Home Cooking	0.92	0.92	Dikshit et al., 1987	use boiling factor
Generic Home Baking	0.92	0.92	Dikshit et al., 1987	use boiling factor
Generic Home Frying	0.92	0.92	Dikshit et al., 1987	use boiling factor
Generic Freezing	1	1	Assumption: No Degradation	
Peanut Butter	1.89	1.89	DEEM default	
Peanut Oil	1	1	DEEM default	
Potato Peels	1.5	1.5	Bayer Reports: 21576, 21588, 21602, 21960, 21980, 21984, 21990, 21993, 21998, 107525 (MRID 44248005)	acceptable
Potato Peeled Flesh	0.93	0.93	Kleinschmidt, 1971; Bayer Reports: 21576, 21588, 21602, 21960, 21980, 21984, 21990, 21993, 21998	acceptable
Potato Boiling	0.60	0.60	Misra and Agrawal, 1989; Misra and Agrawal, 1992; Bayer Reports: 21576, 21588, 21602, 21960, 21980, 21984, 21990	acceptable
Potato Blanching/Steaming	0.32	0.32	Kleinschmidt, 1971	acceptable

Category	Processing Factor proposed by Registrant	Processing Factor acceptable for current analysis	Data Sources¹	Comments and Agency Reviews
Potato Frying	0.24	0.24	Kleinschmidt, 1971	acceptable
Potato Dried Granules	1.26	1.26	Bayer Report: 107525 (MRID 44248005)	acceptable
Soybean Flour (defatted)	0.5	0.5	Bayer Report: 91490 (MRID 40306402)	acceptable
Soybean Flour (Full Fat)	0.5	0.5	Bayer Report: 91490 (MRID 40306402)	acceptable
Soybean Flour (Low Fat)	0.5	0.5	Bayer Report: 91490 (MRID 40306402)	acceptable
Soybean Sprouted Seeds	0.33	0.33	DEEM Default	
Soybean Oil	0.5	0.5	Bayer Report: 91490 (MRID 40306402)	acceptable
Tomato catsup	not supported	1.7	MRID 40204310	Reg Std. Update, 1/7/91 used paste factor
Tomatoes dried	not supported	14.3	DEEM Default	
Tomato juice	not supported	0.27	MRID 40204310	Reg Std. Update, 1/7/91
Tomato paste	not supported	1.7	MRID 40204310	Reg Std. Update, 1/7/91
Tomato puree	not supported	1.2	MRID 40204310	Reg Std. Update, 1/7/91
Wheat Bran	0.37	0.37	Bayer Report: 94723 (MRID 40561201)	acceptable
Wheat Flour	0.05	0.05	Bayer Report: 94723 (MRID 40561201)	acceptable
Wheat Germ	0.42	0.42	Bayer Report: 94723 (MRID 40561201)	acceptable
Wheat Germ Oil	1	0.42	Bayer Report: 94723 (MRID 40561201)	used germ factor

1. All reports were made available to the Agency for this assessment. The following reports from the public literature were used:

Dikshit, A. K., Handa, S.F., and Verma, S.1987 Residues of Metasystox In and On Cabbage and Lablab bean.Indian J. Agric. Sci.57(4)284-286.

Kleinschmidt, M. G. 1971 Fate of DI-SYSTON In Potatoes During Processing. J Agric.Food Chem. 19(6):1196-1197.

Misra, S.S., and Agrawal, H. O. 1989 Phorate and Disulfoton Residues In Potatoes Grown In Northwestern Plains of India. Trop. Agric. 66(4):317-320.

Misra, S.S., and Agrawal, H. O. 1992 Persistence of Phorate and Disulfoton Residues in Potatoes Grown In Northwestern Hills. Indian J. of Plant Protection 20(2):138-143.

Residue Data

The anticipated residues in this assessment are based on a scenario that assumes disulfoton use patterns summarized in Table 5, although it should be noted that in the case of monitoring data residues are assumed to represent a complete distribution of use patterns.

Table 5. Assumptions Concerning Use Patterns of Disulfoton on Food Crops.

Crop	Tolerance	Maximum application rate (lb ai/A)	PHI (days)	Max Number of applications	Application interval	Application type
Asparagus	0.1	1	-	3	Not specified	Foliar application at fern stage
Barley	0.75	1	30	2	Not specified	Soil incorporation broadcast, foliar
Beans, dry	0.75	2	60	1		Soil incorporation
Beans, succ.	0.75	2	60	1	Not specified	Soil incorporation
Broccoli	0.75	1	14	1		Soil incorporation broadcast
Brussels sprouts	0.75	2	30	2	Not specified	Soil incorporation broadcast
Cabbage	0.75	2	42	1	Not specified	Soil incorporation broadcast
Cauliflower	0.75	2	40	2	Not specified	Soil incorporation broadcast
Coffee	0.3	8.92	90	3	Not specified	Soil incorporation broadcast
Corn	0.3	1	28	2		Soil incorporation Foliar
Cotton	0.75	3	28	3	Not specified	Soil incorporation foliar
Hops	0.5	1.68	60	1	Not specified	Not specified
Lentils	0.75	2.12	50	1	Not specified	Soil incorporation

Crop	Tolerance	Maximum application rate (lb ai/A)	PHI (days)	Max Number of applications	Application interval	Application type
Lettuce, head	0.75	2	60	1	Not specified	Soil incorporation broadcast
Lettuce, leaf	0.75 (Reassess. at 2 ppm)	2	60	1	Not specified	Soil incorporation broadcast
Oats	0.75	0.5	Not specified	Not specified		Soil incorporation broadcast, Foliar
Peanuts	0.75	2	Not specified	Not specified		Soil incorporation
Peas, dried	0.75	2.12	50	1		Soil incorporation
Peas, succ.	0.75	2.12	50	1		Soil incorporation
Pecans	0.75	1 (foliar) 3 (soil)	30 (foliar) 80 (soil)	3 (foliar) 1 (soil)		Soil incorporation, Foliar
Peppers, Chile	0.1	2	90	1		Soil incorporation
Peppers, sweet	0.1	2	90	1	-	Soil incorporation
Potatoes	0.75	8	30	3	Not specified	Soil incorporation, broadcast, Foliar
Rice	0.75	2.68	50	2	Not specified	Not specified
Sorghum	0.75	2	7	3	3	Soil incorporation, broadcast, Foliar
Soybeans	0.1	1	Not specified	Not specified		Soil incorporation
Tomatoes	0.75	2-3	30	1 (3 lb ai/A) 2 (2 lb ai/A)	21	Soil incorporation
Wheat	0.3	1	30	1 soil + 2 foliar		Soil incorporation, broadcast, foliar

The following commodities, for which tolerance revocations have been recommended, are not included in the current assessment:

- pineapples
- spinach
- sugarcane
- sugar beets

Bayer Corporation has submitted proposed label changes since completion of the draft RED. This submission has not been reviewed and, at the specific request of SRRD, we are not including the proposed changes in the current assessment. The proposal includes cancellation of the 2% G

formulation (EPA Reg. No. 3125-126) and revising labels for the 15% G (EPA Reg. No. 3125-172) and the 8 lb/gal EC (EPA Reg. No. 3125-307). The pertinent label changes, as summarized by the registrant are as follow:

- Beans:
 - reduce maximum rate from 2 lbs ai/A to 1 lb ai/A
- Brussels sprouts:
 - reduce soil application rate from 2 lbs ai/A to 1 lb ai/A
 - reduce number of soil applications from 2 to 1
- Cauliflower
 - reduce soil application rate from 2 lbs ai/A to 1 lb ai/A
 - reduce number of soil applications from 2 to 1
- Corn:
 - all uses canceled
- Cotton:
 - reduce soil application rate from 3 lbs ai/A to 1 lb ai/A
 - reduce number of soil applications from 3 to 1
 - eliminate foliar applications
- Oats:
 - all uses canceled
- Peanuts:
 - reduce soil application rate from 2 lbs ai/A to 1 lb ai/A
- Pecans:
 - all uses canceled
- Potatoes:
 - reduce soil application rate from 8 lbs ai/A to 3 lb ai/A
 - reduce number of soil applications from 2 to 1
 - retain foliar application east of the Rockies at 1 lb ai/A
 - eliminate foliar applications west of the Rockies
- Sorghum:
 - reduce soil application rate from 2 lbs ai/A to 1 lb ai/A
 - reduce number of soil applications from 2 to 1
 - reduce foliar application rate from 1.5 lbs ai/A to 1 lb ai/A
 - reduce number of foliar applications from 3 to 2
- Tobacco:
 - set maximum seasonal poundage at 4 lbs ai/A
- Tomatoes:
 - all uses canceled
- Wheat:
 - reduce foliar application rate from 1.5 lbs ai/A to 0.75 lb ai/A
 - reduce number of foliar applications from 2 to 1

Derivation of Residue Data for Individual Food Crops and Food Forms

Asparagus

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 182 samples of asparagus for Disulfoton and Demeton-S; 201 samples for the sulfones, and 149 samples for the sulfoxides. All samples were reported as nondetectable.

BEAD reports a weighted average % crop treated of 40% and an estimated maximum of 55%.

The LOD for disulfoton and metabolites is 0.0015 and the LOD for demeton-S and metabolites is 0.003. Assigning a value of $\frac{1}{2}$ LOD for all NDs, and assuming that disulfoton and demeton-S are not present, the combined residue for the sulfone and sulfoxide metabolites is $2 \times 0.0015/2 + 2 \times 0.003/2 = 0.0045$ ppm.

The registrant submitted anticipated residues based on asparagus field trials found in MRID 40056701. Residues on 7 samples of asparagus spears, harvested 44 to 218 days following the last of 3 applications at a rate of 1 lb ai/A, were less than the LOQ of 0.01 ppm.

Asparagus is a nonblended commodity and its processed food forms are assumed to be partially blended.

For acute analysis a Residue Distribution File (RDF) for asparagus was constructed based on all nondetects in proportion to the maximum estimated percent crop treated.

Acute analysis: Construct an RDF for asparagus containing 11 entries = 0.0045 ppm and 9 entries = zero.

Chronic analysis: The residue value = $\frac{1}{2}$ LOD = 0.0045 ppm. An adjustment is used for a weighted average 40% crop treated. $(0.0045) \times (0.40) = 0.0018$ ppm.

Barley

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 77 samples for disulfoton and 12 samples for the other 5 potential residues. All samples were reported as nondetectable. Since fewer than 100 samples are available, monitoring data are not used in this assessment; however, it should be noted that none of the FDA grain samples, including corn, oats, wheat and soybeans had detectable residues.

BEAD reports a weighted average and estimated maximum of 1 % crop treated for barley..

The registrant submitted anticipated residues based on the following barley field trial data representative of 1x label rates.

Bayer Report Number	Application Rate (lbs ai/A)	PHI (Days)	Application Number	Application Interval (Days)	Residue (ppm)	LOQ (ppm)	Treatment Type
07025	1	33	1		<0.1	0.1	Broadcast
07025	1	33	1		<0.1	0.1	Broadcast
49085	1	30	2	31	0.1	0.01	Foliar
49087	1	30	2	60	0.2	0.01	Foliar
49088	1	30	2	40	0.14	0.11	Foliar
49089	1	30	2	58	<0.01	0.01	Foliar
49090	1	30	2	50	<0.01	0.01	Foliar
49091	1	30	2	22	0.04	0.01	Foliar
49261	1x1,0.5x1	30	2	18	0.19	0.12	Foliar
49262	1	31	2	52	0.09	0.01	Foliar
49263	1	29	2	49	0.06	0.01	Foliar
49264	1	32	2	39	<0.01	0.01	Foliar
50841	1	30	2	50	<0.01	0.01	Foliar
68995	1	31	2	66	0.01	0.01	Foliar
68996	1	31	2	66	0.01	0.01	Foliar

Barley is considered a blended commodity. The acute and chronic anticipated residues are calculated from the average of field trial data adjusted for percent crop treated.

Acute and chronic analyses: Use point estimate = average residue = 0.058 ppm and % crop treated = 1%.

Beans, Dry

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of many varieties of dried bean commodities. All bean and pea samples bore no detectable residues of disulfoton or its metabolites. The following table summarized the dried bean data.

Commodity	Number of Analyses Reported During the years 1992-1998					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
Cranberry beans	2	2	2	2	2	2
Garbanzo beans	2	2	2	4	2	2
Kidney beans	16	17	16	36	17	16
Lima beans	22	22	21	24	22	21

Commodity	Number of Analyses Reported During the years 1992-1998					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
mung beans	1	4	1	1	4	1
Navy beans	3	3	2	15	3	2
Pinto beans	28	28	25	63	28	25
Black Beans	2	2	2	3	2	2
Blackeyed peas	10	10	10	12	10	10
English peas	1	7		102	7	
Field peas	1	1	1	1	1	1
Lentils				62		
other	30	34	30	67	34	30
TOTAL	118	132	112	392	132	112

FDA also monitored other dried bean commodities, all being nondetectable for disulfoton. They are not included here because it was not always possible to determine if the samples were actually dry, canned or frozen.

BEAD reports a weighted average of < 1% crop treated and an estimated maximum of 4 % crop treated for dry beans.

Dry beans are considered blended commodities. Monitoring data on blended commodities should be used in an acute analysis with no adjustment for % crop treated.

Acute analysis: The DEEM input is a point estimate based on ½ LOD from monitoring data (0.0045 ppm). There is no need for entering a distribution as all residue values are the same.

Chronic analysis: A residue value of 0.0045 ppm adjusted for a weighted average 1% crop treated = 0.000045 ppm

These data are used as anticipated residues for crop group 6C - Dried shelled pea/bean [exc Soybeans].

Beans, Succulent

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of fresh green beans as summarized in the following table.

Fresh Green Beans	Analyses Reported by FDA During the years 1992-1998					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
Analyzed	685	739	586	701	755	586
Detected residues	0	0	0	0	0	0

During 1994 and 1995 PDP analyzed fresh green beans as summarized below. Four samples in 1994 contained trace levels of demeton-s sulfone. Samples were reported at ½ LOQ = 0.025 ppm, 0.01 ppm, 0.031 ppm, and 0.038 ppm.

Fresh Green Beans	Analyses Reported by PDP During 1994-1995					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
Analyzed	57	77		1178	25	44
Detected residues	0	4		0	0	0
Avg LOD	0.34	0.03		0.01	0.03	0.043

During 1996 and 1997 PDP analyzed canned and frozen green beans as summarized below. Twenty-one samples had detectable demeton-s sulfone. Nineteen trace level detects were reported at ½ the quantitation limit (11 at 0.005 ppm and 8 at 0.01 ppm) and two samples were reported as 0.011 ppm and 0.015 ppm.

Canned/Frozen Green Beans	Analyses Reported by PDP During 1996-1997					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
Analyzed		189		1038	400	
Detected residues		21		0	0	
Avg LOD		0.004		0.005	0.005	

BEAD estimates percent crop treated information for succulent beans as follow:

Crop	% of Crop Treated	
	Weighted Average	Estimated Maximum
Snap Beans, fresh	5%	20%
Snap Beans, processed	5%	20%
Lima Beans, fresh	29%	50%
Lima Beans, processed	5%	10%

The registrant has provided field trial data for succulent beans (MRIDs 44821701 & 44821702),

which are summarized below.

Summary of Field Trial Data for Succulent Beans (bean & pod)

Bayer Report Number	Application Rate (lb ai/A)	PHI (Days)	Application Number	Residue (ppm)	LOQ (ppm)	Treatment Type
49289	1.48	60	1	<0.01	0.01	Soil incorporation
49290	1.48	60	1	<0.01	0.01	Soil incorporation
49289	1.48	75	1	<0.01	0.01	Soil incorporation
49290	1.48	75	1	<0.01	0.01	Soil incorporation
06831	1.50	47	1	0.2	0.1	Soil incorporation
29315	1.63	49	1	0.84	0.06	Soil incorporation
29319	1.63	49	1	0.31	0.06	Soil incorporation
29324	1.63	49	1	0.45	0.06	Broadcast
06797	2.0	52	1	<0.1	0.1	Soil incorporation
09591	2.0	64	1	<0.05	0.05	Broadcast
09591	2.0	64	1	0.06	0.05	Broadcast
09591	2.0	64	1	<0.05	0.05	Broadcast
09591	2.0	64	1	<0.05	0.05	Broadcast
09591	2.0	64	1	<0.05	0.05	Broadcast
09591	2.0	64	1	<0.05	0.05	Broadcast
29315	2.45	49	1	0.76	0.01	Soil incorporation
29319	2.45	49	1	0.23	0.01	Soil incorporation
29324	2.45	49	1	0.15	0.01	Soil incorporation

The average of all of the field trial samples = 0.178 ppm.

The PDP data show hits for demeton-s sulfone in 4% of the fresh samples and 11 % of the processed samples indicating that use of the FDA data may underestimate residues in these commodities. However, the number of PDP sample are lower than normally used in dietary exposure assessments. The FDA monitoring data will be used for fresh green beans but because of trace levels of demeton-s sulfone appearing in PDP data, we will use ½ LOQ (0.015 ppm) instead of ½ LOD (0.0045). This is considered to be a conservative enough treatment of the data to not underestimate residues in green beans. Based on the FDA data it will be assumed that all succulent beans from treated crops will contain ½ the additive LOQ for the sulfones and sulfoxides, i.e., 0.015 ppm. The PDP data on processed beans also indicated that only demeton-s sulfone appeared at mostly trace levels, none of which exceeded 0.015 ppm. The FDA fresh bean data will also be used for canned and frozen beans using ½ LOQ (0.015 ppm).

- Acute analysis: Use FDA data assuming ½ LOQ (0.015 ppm) for all nondetectable samples. The RDF for snap beans, assuming 20% crop treated, contains 1 entry of 0.015 ppm and 4 zeroes. The RDF for processed Lima beans, assuming 10% crop treated, contains 1 entry at 0.015 ppm and 9 zeroes. The RDF for fresh Lima beans, assuming 50% crop treated, contains 1 value of 0.015 ppm and 1 zero.
- Chronic analysis: The average of monitoring data is adjusted by 5% crop treated for snap beans and processed Lima beans, and by 29% crop treated for fresh Lima beans.

Broccoli

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 281 samples of broccoli for Disulfoton, 279 samples for Demeton-S, 309 samples for the sulfones, and 197 samples for the sulfoxides. All were reported as nondetectable except for 2 samples collected in 1994. One sample contained 0.04 ppm disulfoton sulfone and 0.01 ppm demeton-S sulfone. The other sample contained 0.005 ppm disulfoton sulfone and 0.007 ppm demeton-S sulfone. In 1994 PDP analyzed 673 samples of broccoli for disulfoton, 57 samples for the sulfoxide, 98 samples for the sulfone and 70 samples for demeton-S. All were nondetectable.

BEAD reports a weighted average 10 % crop treated and an estimated maximum of 21% crop treated for broccoli.

Raw and cooked Broccoli is considered a nonblended food but the canned and frozen forms are considered partially blended.

- Acute Analysis: A residue distribution, based on 309 samples from the FDA monitoring data, was created with 244 zeroes, 63 at ½ LOD(0.0045 ppm), and 2 positives (0.052 ppm & 0.014 ppm).
- Chronic Analysis: Assuming 10% of samples were from treated broccoli, the residue value used was the average of 278 zeroes, 29 samples at ½ LOD and the 2 positives = $((29) \times (0.0045 \text{ ppm}) + 0.052 \text{ ppm} + 0.014 \text{ ppm}) / 309 = 0.000636 \text{ ppm}$.

Brussels sprouts

During the years of 1992-1998 FDA did not analyze enough samples of Brussels sprouts to be used for anticipated residues. PDP has not included brussels sprouts in their survey program to date.

The Residue Chemistry Update (1/7/91) reported on residues on brussels sprouts (MRID 40156604) harvested 30 days following a single at-planting application at 1 lb ai/A plus 2 postemergence sidedress applications at 1.1 oz ai/1000 feet of row (1.5 x application). The two samples that were analyzed for disulfoton residues contained <0.02 ppm 0.04 ppm. The registrant

proposed a reduction of the tolerance from 0.75 ppm to 0.05 ppm at that time but HED has not recommended such a reduction to date. Bayer Corporation submitted other field trial data in conjunction with their recent dietary exposure assessment (MRIDs 44821701 & 44821702). Residue data were as follows:

Bayer report Number	Application Rate (lb ai/A)	PHI (Days)	Number of Applications	Residue (ppm)	LOQ (ppm)
06857	1	21	2	<0.1	0.1
06857	1	21	2	<0.1	0.1
91148	1	30	3	0.01	0.01
91148	1	30	3	0.03	0.01

BEAD reports a weighted average 20 % crop treated and an estimated maximum of 40% crop treated.

Brussels sprouts is considered a partially blended food.

Acute analysis: Use entire field trial distribution in RDF incorporating BEAD's likely maximum % crop treated as probability of encountering a treated RAC; use ½ LOQ for residues < LOQ (no LOD information available).
DEEM RDF file contains 6 positives (2 @0.01ppm, 2@0.05 ppm, 0.03 ppm, and 0.04 ppm) and 9 zeroes.

Chronic analysis: Input average of field trial data (0.03 ppm), and adjust for average of 20% crop treated.

Cabbage

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 477 samples of cabbage for disulfoton, 510 samples for the disulfoton sulfone, 299 samples for disulfoton sulfoxide, 468 samples for Demeton-S, 505 samples for demeton-s sulfone, and 299 samples for demeton-S sulfoxide. All samples were reported as nondetectable except for 3 samples in 1992 and 2 samples in 1993. Three samples contained only demeton-S sulfone at 0.065, 0.160 and 0.010 ppm. Two samples had detectable levels of both sulfones; one contained 0.9 ppm disulfoton sulfone and 0.74 ppm demeton-S sulfone. The other contained 0.4 ppm disulfoton sulfone and 0.3 ppm demeton-S sulfone. Summing the metabolites for the 5 positive samples results in residues of 0.068 ppm, 0.163 ppm, 0.013 ppm, 1.642 ppm and 0.702 ppm. For purposes of estimating anticipated residues the older sample containing 1.642 ppm will be ignored. All indications are that this sample represents a misuse of disulfoton and would not be representative of expected residues on cabbage. This is borne out by field trial data that fall well below the tolerance level.

PDP has not surveyed for pesticide residues in cabbage to date.

BEAD reports a weighted average 6 % crop treated and an estimated maximum of 9% crop treated for cabbage.

Cabbage is considered to be a nonblended food except for the canned and cured food forms, which are considered to be partially blended.

Acute analysis: A residue distribution file is constructed based on 509 FDA monitoring samples, 4 of which contained detectable residues, and an estimated maximum of 9% crop treated. The RDF contains 42 entries at ½ LOD (0.0045 ppm), 4 positives (0.068 ppm, 0.163 ppm, 0.013 ppm, and 0.702 ppm), and 463 zeroes.

Chronic analysis: Use an average value for monitoring data adjusted for a weighted average of 6 % crop treated. Thirty-one of 509 samples would be expected to come from treated cabbage; 4 positives (0.068 ppm, 0.163 ppm, 0.013 ppm, and 0.702 ppm) and 27 at ½ LOD. The average of these residues = 0.002 ppm.

Cauliflower

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 216 samples for disulfoton, 262 samples for the sulfone, 153 samples for the sulfoxide, 215 samples for demeton-S, 262 samples for the sulfone, and 153 samples for the sulfoxide. No residues were detected in any of the samples.

PDP has not analyzed for residues of pesticides in cauliflower to date.

BEAD reports a weighted average 17 % crop treated and an estimated maximum of 25% crop treated for cauliflower.

Cauliflower is considered to be a nonblended food except for the frozen: cooked food form, which is considered to be partially blended.

Acute analysis: Construct a residue distribution based on no detectable residues in monitoring data and a maximum 25% crop treated. The RDF contains 4 entries; 3 are set at zero and 1 at ½ LOD (0.0045 ppm).

Chronic analysis: Base average residues on ½ LOD and average 17% crop treated. Average residue = $((17) \cdot (0.0045)) / 100 = 0.000765$.

Coffee

Disulfoton is registered for use on Puerto Rico coffee crops and for foreign use on crops in Brazil, Honduras, South Africa, and Guatemala. The current assessment is based on data submitted by the registrant (MRIDs 44821701 & 44821702). Residues in coffee fruit from

controlled field trial are in the following table.

Bayer Report Number	application rate (lbs ai/A)	Number applications	PHI (days)	Residue (ppm)	LOQ
91497	15.62	1	89	0.10	0.02
91497	15.62	1	89	0.09	0.04
10921	15.87	1	71	<0.2	0.2
10921	15.87	1	85	<0.2	0.2

Based on market data the registrant estimated the proportion of the U.S. market supply for imported and domestic coffee that may have been treated with disulfoton. The registrant estimates that for the years of 1993 through 1995 the maximum proportion of domestic coffee treated may be 1.4% and the maximum proportion of imported coffee may reach 99%. Thus, for the current analyses, 100% crop treated is assumed.

Coffee is considered a blended commodity.

Acute and chronic analyses: Use the average of field trial data adjusted for % crop treated.
 $(0.098) * (1) = 0.098$ ppm.

Corn, Field

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 140 samples of field corn for Disulfoton, 100 samples for Demeton-S, Demeton-S sulfone, and Disulfoton sulfone; and 76 samples for the sulfoxides. All samples were reported as nondetectable.

During this same period FDA reported analyses of 69 samples of popcorn for Disulfoton, 67 samples for disulfoton sulfone, 60 samples for disulfoton sulfoxide, 67 samples for Demeton-S, 67 samples for Demeton-S sulfone, and 60 samples for demeton-S sulfoxide. All samples were reported as nondetectable.

BEAD reports a weighted average and an estimated maximum of <1% crop treated for field corn.

All food forms of field corn and pop corn are considered to be blended.

The registrant does not support uses on disulfoton on corn and did not include these commodities in their dietary risk assessment.

Acute analysis: Average monitoring data ($\frac{1}{2}$ LOD; 0.0045 ppm) with no adjustment for % crop treated = 0.0045 ppm.

Chronic analysis: Use average monitoring data adjusted for 1% crop treated. $(0.0045 \text{ ppm}) * (0.01) = 0.000045$ ppm.

Corn, Sweet

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 746 samples of sweet corn for Demeton-S, 755 samples for Demeton-S sulfone, 596 samples for demeton-S sulfoxide, 776 samples for Disulfoton, 782 samples for disulfoton sulfone, and 596 samples for disulfoton sulfoxide. All samples were reported as nondetectable.

PDP analyzed canned/frozen sweet corn from April, 1994 to March, 1996.

Year	Number of Analyses of Canned Sweet Corn by PDP (all nondetects)					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
1994	34			462	5	29
1995		145		671		
1996		45		173	45	
total	34	190		1306	50	29

BEAD reports a weighted average of <1% crop treated and an estimated maximum of 1% crop treated for sweet corn.

Raw and cooked sweet corn are considered to be nonblended foods but canned and frozen forms are considered to be partially blended.

The registrant has indicated that they do not wish to support uses on disulfoton on corn and did not include these commodities in their dietary risk assessment.

The preponderance of the monitoring data indicate that detectable residues should not occur on either fresh or processed sweet corn. However, it is not possible to determine how many of the FDA samples were actually fresh corn and how many were already processed. The limited PDP data confirm that processed corn will not contain detectable residues

Acute Analysis: Construct an RDF with 100 entries. Ninety-nine of them are zero and 1 is set at $\frac{1}{2}$ LOD (0.0045 ppm).

Chronic Analysis: Average of 99 zeroes and 1 at $\frac{1}{2}$ LOD= 0.00005 ppm.

Cotton

Suitable monitoring data are not available for cotton commodities.

BEAD reports a weighted average of 5% crop treated and an estimated maximum of 8% crop

treated for cotton.

The registrant has submitted a proposal to reduce the label rate for disulfoton on cotton to 1 lb ai/A, reduce the number of soil applications from 3 to 1, and eliminate the foliar applications. This appears to be at least in part in response to Agency requirements because it was concluded in the Residue Chemistry Chapter of the RED that adequate data are not available to support the maximum rates recommended on some labels. SRRD has requested this dietary exposure analysis be conducted without including registrant proposed label changes but in this case adequate data are not available.

In the absence of adequate field trial data we will assume a maximum expected residue based on data available. A cotton processing study is available (MRID 44248006; reviewed by J. Abbotts, 7/8/97, D235171) in which disulfoton was applied twice to the soil at 12 oz ai/1000 ft row. Then 3 foliar sprays were applied 7 days apart, each at 45 oz ai/A, with the last treatment at squaring, 111 days prior to harvest. Each application represented 5x the maximum label rate. Residues in cottonseed were less than the LOQ (0.025 ppm). In data submitted in support of a refined dietary exposure assessment (MRIDs 44821701 & 44821702) Bayer included data from field trials in which cotton was treated at 1 lb ai/A up to 4 times by soil incorporation and harvest 28 days later. There was only one sample with quantifiable residues. It was reported as 0.05 ppm. For purposes of this exposure assessment we will assume that residues won't exceed 0.05 ppm under normal use patterns for cotton.

Cottonseed food forms are considered blended.

Acute analysis: Assume all treated cotton will produce seeds with residues of 0.05 ppm and assume maximum % crop treated= 8%. Use an RDF with 8 entries = 0.05 ppm and 92 entries = zero.

Chronic analysis: Residue value = 0.05 ppm and average % crop treated = 5%

Hops

There are no registrations for use of disulfoton on domestic hops but a tolerance of 0.5 ppm remains in effect and allows the import of treated hops. The current assessment is based on data submitted by the registrant (MRIDs 44821701 & 44821702). Residues on Hops catkins from controlled field trial are in the following table.

Bayer Report Number	application rate (lbs ai/A)	Number applications	PHI (days)	Residue (ppm)	LOQ (ppm)
27036	2	1	66	<0.15	0.15
27036	2	1	66	<0.15	0.15
27036	2	1	66	<0.15	0.15
27036	2	1	66	<0.15	0.15

Based on market data the registrant estimated the proportion of the beer consumed in the U.S. that may have been brewed with imported hops treated with disulfoton. Disulfoton is used on Hops only in Argentina.

It was assumed that 100% of imported Hops may be treated with disulfoton. The domestic beer that may be brewed with imported Hops was determined. A total percentage of beer consumed that may have been brewed from disulfoton treated hops was derived. It was estimated that 5% of beer consumed in the U.S. is imported and that 21 % of domestic beer may have been brewed with imported hops containing disulfoton. So, the percentage of beer consumed brewed with treated hops = 27%.

Hops are considered a widely blended commodity meaning that normally one would not be able to use percent crop treated information to predict the probability that a specific serving of beer had been brewed from treated hops. There is not enough information available at this time to determine if this is a valid assumption for exposure from hops grown in Argentina; however, the assumptions involved here are quite conservative and the field trial data indicate all LOQ values so the probability of significant dietary exposure to disulfoton through this use seems small.

Acute analyses: Assume 27% of beer contains residues at $\frac{1}{2}$ LOD (0.075 ppm). Use RDF with 27 entries = 0.075 ppm and 73 entries = zero.

Chronic analysis: Use average field trial data adjusted for 27% crop treated = $(0.075) \times (0.27) = 0.02$ ppm.

Lentils

Use dry bean/pea data to estimate dietary exposure from consumption of lentils.

Lettuce, Head

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 538 samples of head lettuce for demeton-S, 789 samples for demeton-S sulfone, 378 samples for demeton-S sulfoxide, 539 samples for disulfoton, 790 samples of disulfoton sulfone, and 378 samples of disulfoton sulfoxide. All samples were nondetectable.

PDP analyzed 691 samples of lettuce in 1994 for disulfoton, 74 samples for disulfoton sulfone, 29 samples for disulfoton sulfoxide, and 73 samples for demeton-S. No residues were detected in any of the samples.

BEAD reports a weighted average 4 % crop treated and an estimated maximum of 10% crop treated for head lettuce.

Head lettuce is considered a nonblended food but due to uniformly nondetectable residues in

monitoring data the data will be use directly in constructing a residue distribution.

Acute analysis: Construct an RDF with 10 entries; 1 entry set at ½ LOD (0.0045 ppm) and 9 entries set at zero.

Chronic analysis: Use average of monitoring data adjusted for 4% crop treated. Residue = (0.0045 ppm)*(0.04) = 0.00018 ppm.

Lettuce, Leaf

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 702 samples of leaf lettuce for demeton-S, 864 samples for demeton-S sulfone, 449 samples for demeton-S sulfoxide, 705 samples for disulfoton, 866 samples of disulfoton sulfone, and 449 samples of disulfoton sulfoxide. Four samples had detectable residues; 3 of these had both disulfoton sulfone and demeton-S sulfone as follows: disulfoton sulfone+demeton-S sulfone = 0.030 ppm + 0.05 ppm; 0.05 ppm + 0.05 ppm; and 0.005 ppm +0.007 ppm. The fourth sample contained 0.15 ppm demeton-S sulfone. The additive residue values in the 4 positive samples were 0.082 ppm, 0.102 ppm, 0.014 ppm, and 0.153 ppm.

BEAD reports a weighted average 2 % crop treated and an estimated maximum of 4% crop treated for lettuce other than head lettuce.

Leaf Lettuce is considered a nonblended food but not enough positive samples are present to simulate single servings of lettuce by decompositing. The hits are few enough and at low enough level that the results will be used directly along with percent crop treated data to construct a residue distribution.

Acute analysis: Use 866 monitoring samples. Construct RDF with 4 positives (0.082 ppm, 0.102 ppm, 0.014 ppm, and 0.153 ppm), 31 set at ½ LOD (0.0045 ppm), and 831 zeroes.

Chronic analysis: Average of monitoring data based on 4 positives (0.082 ppm, 0.102 ppm, 0.014 ppm, and 0.153 ppm), 13 set at ½ LOD (0.0045 ppm), and 849 zeroes. Residue = 0.00047 ppm.

Oats

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 53 samples of oat grain for demeton-S, 53 samples for demeton-S sulfone, 50 samples for demeton-S sulfoxide, 155 samples for disulfoton, 53 samples of disulfoton sulfone, and 50 samples of disulfoton sulfoxide. No residues were detected.

PDP has not analyzed oat grain to date.

The use of disulfoton on oats is restricted to the state of Maine and the registrant wants to cancel all uses on oats. Nevertheless, they submitted oat field trial results as part of a refined dietary exposure assessment (MRIDs 44821701 & 44821702). These data are summarized below.

Residues in oat seeds following indicated applications of disulfoton as broadcast treatment.

Bayer Report Number	Application Rate (lbs ai/A)	PHI (Days)	Application Number	Application interval	Residue (Days)	LOQ
07036	1	77	1		<0.1	0.1
06981	1	77	1		<0.1	0.1
06979	1	77	1		<0.1	0.1
06980	1	77	1		<0.1	0.1
49297	1	79	1		<0.01	0.01
49215	1	79	1		<0.01	0.01
49314	1	80	1		<0.01	0.01
06990	1	98	1		<0.1	0.1
06990	1	98	1		<0.1	0.1
06990	1	98	1		<0.1	0.1
49313	1	135	1		<0.01	0.01
49214	1	61	2	19	<0.01	0.01
49215	1	62	2	17	<0.01	0.01
49216	1	66	2	69	<0.01	0.01

BEAD reports a weighted average of < 1% of the crop treated and an estimated maximum of 4% of the crop treated for oats.

Oat grain is a blended commodity. The acute and chronic anticipated residues are calculated from the average of field trial data adjusted for percent crop treated.

Acute analysis: Point estimate = average residue adjusted for 4 % crop treated = $0.0275 \times 0.04 = 0.0011$ ppm.

Chronic analysis: Average residue = 0.0275 ppm and % crop treated = 1%.

Peanuts

Adequate monitoring data on peanuts are not available.

The registrant has proposed a label amendment reducing the soil application rate from 2 lbs ai/A to 1 lb ai/A but SRRD has specifically requested that we not include this proposal in the current assessment. Residue data representing 2 lbs ai/A are readily available but other data reviewed in

the Residue Chemistry Update to the Registration Standard (1/7/91) indicate that the present tolerance of 0.75 ppm will not be exceeded. Data submitted in MRID 40204311 indicated residues from <0.02 ppm to 0.09 ppm in nutmeats from plants that had 2 applications of disulfoton, one sidedress postemergence plus one banded over the row at pegging at 2.25 oz ai/1000 feet of row (1x). Another study (MRID 40768901) included the same application pattern except the at-pegging application was at 2x. Residues in nutmeats from this study were nondetectable (<0.02 ppm). For purposes of this assessment it will be assumed that average residues from field trials will not exceed the maximum value reported in the above studies, i.e., 0.09 ppm.

BEAD reports a weighted average of 3% of the crop treated and an estimated maximum of 5% of the crop treated for peanuts.

Peanuts are considered a blended commodity.

Acute analysis: Point estimate = 0.09 ppm adjusted for 5 % crop treated = 0.0045 ppm.
Chronic analysis: Residue input = 0.09 ppm and % crop treated = 3%.

Peas, dry

Use dry bean/pea data as input for acute and chronic analysis.

Peas, succulent

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 430 samples of green peas for demeton-S, 529 samples for Demeton-S sulfone, 363 samples for the Demeton-S sulfoxide, 441 samples for disulfoton, 529 samples for disulfoton sulfone, and 363 samples for disulfoton sulfoxide. All samples were reported as nondetectable.

PDP sampled canned/frozen sweet peas from April, 1994 until June, 1996. There were no detectable residues in PDP data either.

	Number of Analyses of Canned/Frozen Sweet Peas by PDP (all nondetects)					
Year	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
1994	72			433	42	30
1995	69	144		670	69	
1996		90		355	90	
total	141	234		1458	201	30

BEAD reports a weighted average <1 % crop treated and an estimated maximum of 7% crop treated. for green peas.

Sweet peas are considered to be partially blended so monitoring data can be used directly in a residue distribution file and percent crop treated can be used to estimate the probability that residues will occur on samples.

Acute analysis: Construct an RDF with 100 entries; 7 samples will be entered at $\frac{1}{2}$ LOD and 93 samples will be entered as zeroes.
Chronic analysis: Use an average based on $\frac{1}{2}$ LOD and 1% crop treated. Residue entry = $(0.0045 \text{ ppm}) \times (0.01) = 0.000045 \text{ ppm}$.

Pecans

Tolerances are currently established at 0.75 ppm for pecans but HED recommended in the RED for a reduction to 0.1ppm. The registrant is canceling all uses for pecans but SRRD specifically requests that we leave this commodity in the current assessment.

Data reviewed in the Residue Chemistry Chapter of the Registration Standard (3/8/84) showed that residues were all nondetectable <0.1 ppm. These data were deemed acceptable and a recommendation was made to decrease the established tolerance of 0.75 ppm to 0.1 ppm.

For purposes of this assessment the assumption of $\frac{1}{2}$ LOD = 0.05 ppm is made.

BEAD reports a weighted average 1 % crop treated and an estimated maximum of 4% crop treated. for pecans.

Pecans are considered to be partially blended.

Acute analysis: Construct RDF of 25 entries; 1 entry at 0.05 ppm and 24 entries of zero.
Chronic analysis: Residue input = 0.05 ppm. Percent crop treated = 1%

Peppers, Chili

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 69 samples of hot peppers for Demeton-S, 82 samples for Demeton-S sulfone, 57 samples for demeton-S sulfoxide, 70 samples for Disulfoton, 83 samples for disulfoton sulfone, and 57 samples for disulfoton sulfoxide. All samples were reported as nondetectable.

The registrant provided field trial data to represent soil applications to chili peppers in MRIDs 44821701 & 44821702. Three samples were harvested 83-98 days after a application at 3 lb ai/A. One sample was reported at 0.1ppm (=LOQ), and two others were nonquantifiable (<0.01 ppm).

BEAD reports a weighted average 25 % crop treated and an estimated maximum of 40% crop treated for hot peppers.

Uncooked and cooked peppers are nonblended except for canned and frozen forms, which are

partially blended.

Acute analysis: Based on field trial data, construct an RDF with 3 positives (0.1 ppm, 0.05 ppm, 0.05 ppm) and 5 zeroes.

Chronic analysis: Residue entry = average of positives = 0.067. % crop treated = 25%.

Peppers, sweet

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 355 samples of sweet peppers for Demeton-S, 387 samples for Demeton-S sulfone, 284 samples for demeton-S sulfoxide, 363 samples for Disulfoton, 395 samples for disulfoton sulfone, and 284 samples for disulfoton sulfoxide. All samples were reported as nondetectable.

BEAD reports a weighted average 4 % crop treated and an estimated maximum of 10% crop treated for Bell peppers.

Uncooked and cooked peppers are nonblended except for canned and frozen forms, which are partially blended.

FDA monitoring data will be used in the current assessment.

Acute assessment: Construct RDF with 10 entries; 1 entry = $\frac{1}{2}$ LOD (0.0045 ppm) and 9 entries = zero.

Chronic assessment: Average residues = $\frac{1}{2}$ LOD adjusted for average % crop treated = $(0.0045\text{ppm}) \times (0.04) = 0.00018$ ppm.

Potatoes

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 1300 samples of potatoes for Demeton-S, 1350 samples for Demeton-S sulfone, 1133 samples for demeton-S sulfoxide, 1319 samples for Disulfoton, 1368 samples for disulfoton sulfone, and 1133 samples for disulfoton sulfoxide. Six samples of potatoes had detectable residues. One sample in 1992 had 0.110 ppm disulfoton sulfone and 0.380 ppm disulfoton sulfoxide. Another sample taken in 1992 had only disulfoton sulfone detectable at 0.110 ppm. Four other samples since then have had detectable residues of demeton-S sulfone; one at 0.058 ppm and three recorded as trace levels. The additive levels of residues in the 6 positive samples is as follow (trace level residues are assumed to be $\frac{1}{2}$ LOQ): 0.493 ppm, 0.114 ppm, 0.061 ppm, 0.053 ppm, 0.053 ppm, and 0.053 ppm. Use 1133 samples as total number of samples for purposes of this analysis.

PDP analyzed potatoes from May, 1991 until December, 1995. The results for years 1994 through 1997 are summarized in the following table. Three samples collected in 1995 had detectable residues. One sample contained disulfoton and demeton-S sulfone at levels of 0.005 ppm and 0.025 ppm. Two other samples were reported to contain demeton-S sulfone at 0.01 ppm and 0.03 ppm.

Year	Number of Analyses of potatoes by PDP					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
1994	36			694	62	24
1995		148 (3 hits)		707 (1 hit)		
total	36	148		1401	62	24

The registrant has proposed to amend all disulfoton labels to reflect a reduction of the maximum soil application rate from 8 lbs ai/A to 3 lbs ai/A, reduce the number of soil applications from 2 to 1, eliminate foliar applications west of the Rockies, and retain foliar applications east of the Rockies at 1 lb ai/A. SRRD has requested that we not consider these changes in our current assessment. Therefore, an assessment will be conducted using the most complete monitoring data, i.e., data from FDA.

BEAD reports a weighted average 4 % crop treated and an estimated maximum of 7% crop treated for potatoes.

Whole potatoes are nonblended, canned and frozen potatoes are partially blended, dried potatoes are blended.

Acute: Use FDA data for all forms of whole potatoes and potato peels to create an RDF. There were not enough positives to merit decompositing the data for those forms that are considered not blended. The scarcity of hits and low levels encountered are confirmed by the PDP data. Judging the results from both sets of data, it is concluded that the monitoring data can be used for the residue distribution. The RDF file for potatoes should consist of 93% zeroes and 7% samples that could have been exposed to disulfoton. Using 1133 monitoring samples, there should be 1054 entries = zero, 73 entries = $\frac{1}{2}$ LOD (0.0045 ppm), and the 6 positives (0.493 ppm, 0.114 ppm, 0.061 ppm, 0.053 ppm, 0.053 ppm, and 0.053 ppm).

For dried potatoes use average of monitoring data in DEEM with processing factor. Residue input = $((73 \times 0.0045) + 6 \text{ positives}) / 1133 \text{ samples} = 0.001 \text{ ppm}$.

Chronic: Use average monitoring data adjusting for 4% of crop treated. Residue input = $((39 \times 0.0045) + 6 \text{ positives}) / 1133 \text{ samples} = 0.0009 \text{ ppm}$.

Rice

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 246 samples of rice grain for Demeton-S, 247 samples for Demeton-S sulfone, 156 samples for demeton-S sulfoxide, 253 samples for Disulfoton, 247 samples for disulfoton sulfone, and 156 samples for disulfoton sulfoxide. All samples were nondetectable.

Disulfoton is not registered for domestic use on rice but a tolerance of 0.75 ppm allows for import of treated rice. The current assessment is based on data submitted by the registrant (MRIDs 44821701 & 44821702). Field trial data based on 1x application rate are as follows:

Bayer Report Number	Application rate (lbs ai/A)	Number applications	PHI (days)	Residue (ppm)	LOQ (ppm)
13761	2	1	56	<0.1	0.1
13762	2	1	56	0.2	0.1
14866	2	1	54	0.3	0.1
14867	2	1	60	0.5	0.1

The registrant estimated the proportion of the U.S. market supply for imported rice that may have been treated with disulfoton. Disulfoton is used on rice in Japan, Taiwan, and Costa Rica.

The proportion of imported rice from these countries in the U.S. supply was used as percent crop treated (it was assumed that all rice imported from these countries had been treated). These consideration led to an estimate 0.005% average percent crop treated and 0.006% maximum percent crop treated.

Rice is considered a widely blended commodity which means that normally one would not be able to use percent crop treated information to predict the probability that a specific serving had come from a crop that had been treated with disulfoton. However, in this case, it seems reasonable to assume that all rice except that percentage imported from Japan, Taiwan, and Costa Rica would have zero residues.

Acute analysis: In the current acute analysis a distribution of residues is simulated using the average of the residue values from field trials (0.26 ppm) and adding enough zeros to produce a distribution containing 0.006 % detectable residues and 99.994% zeros.

Chronic analysis: Use 0.26 ppm residue value adjusted for 0.005 % crop treated.

Sorghum

Monitoring data are not available for sorghum grain.

The registrant is proposing label amendments for this crop that include reducing both soil and foliar application rates to 1 lb ai/A, and reducing the number of applications to 1 soil application and 2 foliar applications. SRRD has requested that we not include these proposals in our current exposure assessment. Thus, given the relative insignificant intake of food products containing sorghum grain, we are basing our estimate on the current tolerance level of 0.75 ppm, which was deemed appropriate for reregistration.

BEAD reports a weighted average <1 % crop treated and an estimated maximum of 1% crop treated for sorghum.

Sorghum is considered a blended commodity.

Acute and Chronic analysis: Residue input = 0.75 ppm. Percent crop treated = 1%

Soybeans

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 79 samples of soybeans for Demeton-S, 82 samples for Demeton-S sulfone, 73 samples for demeton-S sulfoxide, 82 samples for Disulfoton, 82 samples for disulfoton sulfone, and 73 samples for disulfoton sulfoxide. All samples were nondetectable.

During 1997 PDP analyzed 158 samples for disulfoton with no detects.

The registrant submitted the following summary of available field trial data in support of a dietary exposure assessment (MRIDs 44821701 & 44821702).

Bayer Report Number	Application Rate (lbs ai/A)	PHI (days)	Application Number	Residue (ppm)	LOQ (ppm)	Application type
20178	1	132	1	<0.05	0.05	Soil
20177	1	143	1	<0.05	0.05	Soil
20179	1	143	1	<0.05	0.05	Soil
91489	1	100	1	<0.03	0.05	Soil
91489	1	131	1	<0.03	0.05	Soil
91489	1	138	1	<0.03	0.05	Soil

BEAD reports a weighted average and an estimated maximum <1 % crop treated for soybeans. Soybeans are considered to be blended.

Acute and Chronic analysis: Residue = average of field trial adjusted for 1% crop treated = $(0.02) \times (0.01) = 0.0002$ ppm.

Tomatoes

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 624 samples of tomatoes for Demeton-S, 698 samples for Demeton-S sulfone, 472 samples for demeton-S sulfoxide, 671 samples for Disulfoton, 745 samples for disulfoton sulfone, and 472 samples for disulfoton sulfoxide. All samples were reported as nondetectable.

PDP has analyzed fresh tomatoes since July, 1996. Reported results are summarized in the following table.

Year	Number of Analyses of tomatoes by PDP (all nondetects)					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
1996		27		174	27	
1997		108		707	282	
total		135		881	309	

BEAD reports a weighted average and an estimated maximum <1 % crop treated for tomatoes.

Uncooked and cooked whole tomatoes are considered to be nonblended commodities, canned and frozen tomatoes are partially blended, and all processed food forms of tomatoes are considered blended.

FDA monitoring data will be used for this assessment.

Acute analysis: For whole tomatoes (uncooked, cooked, canned & frozen) and tomato juice, create an RDF of 100 entries with 99 zeroes and 1 entry of ½ LOD (0.0045 ppm).

For dried tomatoes, catsup, paste & puree, use average of monitoring data for the RAC incorporating ½ LOD and % crop treated to calculate average residue; use as point input in DEEM and put processing factor in DEEM. Point estimate for DEEM = (0.0045 ppm)*(0.01) = 0.000045 ppm.

Chronic analysis: Use average monitoring data for RAC for all food forms along with the appropriate processing factor. Residue input = 0.000045 ppm.

Wheat

During the years of 1992-1998 FDA Domestic Surveillance reported analyses of 161 samples of wheat for Demeton-S, 167 samples for Demeton-S sulfone, 124 samples for demeton-S sulfoxide, 1015 samples for Disulfoton, 167 samples for disulfoton sulfone, and 124 samples for disulfoton sulfoxide. All samples were reported as nondetectable.

PDP analyzed wheat samples from February, 1995 until January, 1998. The analyses are summarized in the following table. One sample was reported to contain a residue of disulfoton sulfone below the limit of quantitation (reported as ½ LOQ=0.025 ppm).

Year	Number of Analyses of Wheat by PDP					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
1995	600			600	600	
1996	340			340	340 (1 hit)	
1997	623			623	623	
total	1563			1563	1563	

It was concluded in the Residue Chemistry Chapter of the Disulfoton RED (10/3/97) that uses eligible for reregistration include maximum application rates as follow: 1 soil application at 1 lb ai/A followed by 2 foliar applications at 0.75 lb ai/A, PHIs being 75 days for soil applications and 30 days for foliar applications. The registrant has summarized field trial data available in support of wheat uses (MRIDs 44821701 & 44821702). The following table includes residue data from those trials conducted at the 1x rate.

Bayer Report Number	Application Rate (lbs ai/A)	PHI (Days)	Application Number	Interval (Days)	Residue (ppm)	LOQ (ppm)	Treatment Type
99130	1x1, 0.75x2	27	3	14,14	<0.01	0.01	soil incorp/foliar
99130	1x1, 0.75x2	29	3	14,14	<0.01	0.01	soil incorp/foliar
99130	1x1, 0.75x2	29	3	14,14	<0.01	0.01	soil incorp/foliar
91477	1x1, 0.75x2	29	3	45,55	<0.02	0.02	broadcast/foliar
99130	1x1, 0.75x2	30	3	14,14	<0.01	0.01	soil incorp/aerial
99130	1x1, 0.75x2	30	3	14,14	<0.01	0.01	soil incorp/aerial
99130	1x1, 0.75x2	30	3	14,14	<0.01	0.01	soil incorp/foliar
99130	1x1, 0.75x2	30	3	14,14	0.03	0.01	soil incorp/foliar
91477	1x1, 0.75x2	30	3	151,30	0.02	0.02	broadcast/foliar
99130	1x1, 0.75x2	31	3	14,14	0.01	0.01	soil incorp/aerial
99130	1x1, 0.75x2	31	3	14,14	<0.01	0.01	soil incorp/aerial
99130	1x1, 0.75x2	31	3	14,14	<0.01	0.01	soil incorp/foliar
91477	1x1, 0.75x2	31	3	28,30	<0.02	0.02	broadcast/foliar
91477	1x1, 0.75x2	32	3	238,29	<0.02	0.02	broadcast/aerial
91477	1x1, 0.75x2	37	3	147,61	<0.02	0.02	broadcast/foliar
91477	1x1, 0.75x2	38	3	260,27	<0.02	0.02	broadcast/aerial
91477	1x1, 0.75x2	30	3	151,30	<0.02	0.02	broadcast/foliar

BEAD reports weighted averages and estimated maxima of $\geq 1\%$ crop treated for winter and spring wheat.

All food forms of wheat are considered to be blended.

The field trial data will be used in the current assessment because it allows a more refined estimate of potential residues. The average residue value from the field trials is 0.009 ppm.

Acute and Chronic analysis: Point estimate in DEEM = average field trial adjusted for percent crop treated = $(0.009 \text{ ppm}) \times 0.01 = 0.00009 \text{ ppm}$.

Milk

There are no tolerances for meat and milk at the present time but tolerances have been recommended based on an estimated maximum dietary burden of 5 ppm for cattle. The residue of concern is the same as for plants; however, animal metabolism data identified only the parent, disulfoton in milk and meat.

FDA monitoring for the years of 1992-1998 monitored for residues in milk is summarized in the following table. There were no detectable residues in these samples.

commodity	Analyses of Milk by FDA During the Years of 1992-1998					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
Plain Milk	5	5	1	81	5	1
Vitamin D Milk	1	1		26	1	
Low-fat Milk				18		
Total	6	6	1	125	6	1

PDP analyzed milk samples from Jan, 1996 until Oct, 1998. A summary of disulfoton analyses through 1997 is provided in the table below. The LOD for all disulfoton analyses was 0.001 ppm.

Year	Number of Analyses of Milk by PDP					
	Demeton-S	Demeton-S Sulfone	Demeton-S Sulfoxide	Disulfoton	Disulfoton Sulfone	Disulfoton Sulfoxide
1996		202		346	346	
1997		272		665	665	
total		474		1011	1011	

Estimation of Residues in Meat and Milk

Potential Transfer of Residues to Meat and Milk

Anticipated residues for meat and milk were provided previously (J. Abbotts, D184966, 9/17/97). There have been some revisions in procedures for these calculations; therefore, the anticipated residues will be estimated again in this assessment. Unless otherwise noted here, data are used from the above mentioned Abbotts review and documents referenced therein.

Derivations of feed-to-milk/meat transfer ratios are based on feeding studies submitted in support of pesticide petition # 7F1895 (M.J. Nelson, 6/27/77; The Disulfoton Residue Chemistry Chapter, 4/6/84). Cattle were fed disulfoton sulfoxide, disulfoton sulfone, oxygen analog sulfoxide, and oxygen analog sulfone in a 1:2:1:1 ratio, at 3.6 ppm, 7.2 ppm, and 18 ppm in the diet, dry weight basis, for 28 days. Combined tolerance residues were determined for tissues at the two lower feeding levels, and for milk at all levels. The results of the tissue and milk analyses are shown in the following tables.

Residues in Tissues of Cattle fed Disulfoton and Metabolites for 28 Days.

Tissue	3.6 ppm in Diet	7.2 ppm in Diet
Liver	0.01-<0.03	0.01,0.01,0.01
Kidney	0.01-0.03	0.01-0.02
Muscle	<0.01,<0.01,<0.01	<0.01,<0.01,<0.01
Fat	<0.01,<0.01,<0.01	<0.01,<0.01,<0.01

Average Residues in Milk of Three Cows after being fed Disulfoton and its Metabolites for 13 Days (assuming LOQ values = ½ LOQ).

Feeding Level	3.6 ppm	7.2 ppm	18 ppm
Average Residue in milk of 3 cows	0.0005	0.002	0.007
milk res./feed res.	0.0001	0.0003	0.0004

The transfer ratio for milk is estimated from the average concentration in milk once a plateau is reached in the feeding study at the 1x dose rate in the feed. The 1x feeding rate of 5 ppm is bracketed by the 3.6 and 7.2 ppm feeding levels. Thus, for purposes of this acute dietary risk assessment:

Milk transfer ratio = 0.0002

The transfer ratio for tissues is estimated from the maximum ratio at the 1x feeding rate. Using the two feeding rates that bracket the 1x dose rate and assuming nonquantifiable residues = ½ LOQ:

Liver, kidney, and meat byproducts transfer ratio = $0.03/3.6 = 0.008$
Meat and fat transfer ratio = $0.005 \text{ ppm}/7.2 \text{ ppm} = 0.0007$

Calculation of the Maximum Theoretical Dietary Burden (MTDB)

Cattle Maximum Theoretical Dietary Burden (MTDB) ^{1, 2}

Commodity	Anticipated residue (Tolerance) ppm	% dry matter	% of livestock diet	MTDB ppm
Beef cattle				
Sorghum aspirated fractions	2	85	20	0.47
Sorghum grain	0.75	86	15	0.13
Peanut meal	0.1	85	15	0.02
Pea vines	5	25	25	0.10
Peanut hay	5	85	25	0.29
Total:			100	1
Dairy cattle				
Sorghum aspirated fractions	2	85	20	0.47
Sorghum grain	0.75	86	15	0.13
Peanut meal	0.1	85	15	0.02
Pea vines	5	25	50	10
Total:			100	10.6

¹. Taken from Abbotts review of 9/17/97 with following modifications: Anticipated residues are entered at tolerance levels for potential livestock feed items. Corn aspirated grain fractions were replaced with sorghum aspirated grain fractions. The registrant does not wish to support corn and sorghum is the next highest potential contributor to grain dust residues based on the potential for residues to concentrate in the dust.

². Anticipate residues could be based on average residues in crop field trials for blended feeds and the highest average field trial for nonblended feeds. In this case the very conservative estimates of tolerance level residues in feeds were used because required field trial data and label amendments necessary to properly evaluate the potential for residues to transfer to milk and meat are not available.

Anticipated Residues for Acute Dietary Exposure

Maximum concentration in milk = transfer ratio * MTDB = $(0.0002) * (10.6) = 0.002 \text{ ppm}$

Maximum concentration in meat/fat = $(0.0007) * (1) = 0.0007 \text{ ppm}$

Maximum concentration in liver/kidney/meat byproducts = $(0.008) * (1) = 0.008 \text{ ppm}$

These maximum concentrations will be used in the acute dietary assessment by assuming they apply only to that percentage of milk or meat corresponding to the highest percent crop treated for any one feed item for that chemical. The highest percent crop treated for disulfoton-treated feed crops is 8% for cotton. Therefore, residue distribution files for meat and milk commodities contain 100 entries, each. Eight entries are equal to the maximum concentrations calculated above, and the remaining 92 entries are zeroes.

Chronic Dietary Exposure

Cattle Average Theoretical Dietary Burden ^{1, 2}

Commodity	Anticipated residue (Tol*%CT) ppm	% dry matter	% of livestock diet	Average Theoretical Dietary Burden (ATDB) ppm
Beef cattle				
Sorghum aspirated fractions	2(1%)=0.02	85	20	0.0047
Sorghum grain	0.75(1%)=0.0075	86	15	0.0013
Peanut meal	0.1(3%)=0.003	85	15	0.0005
Pea vines	5(1%)=0.05	25	25	0.05
Peanut hay	5(3%)=0.15	85	25	0.0441
Total:			100	0.10
Dairy cattle				
Sorghum aspirated fractions	2(1%)=0.02	85	20	0.0047
Sorghum grain	0.75(1%)=0.0075	86	15	0.0013
Peanut meal	0.1(3%)=0.003	85	15	0.0005
Pea vines	5(1%)=0.05	25	50	0.1
Total:			100	0.11

¹. Taken from Abbotts review of 9/17/97 with following modifications: Anticipated residues are entered at tolerance levels for potential livestock feed items. Corn aspirated grain fractions were replaced with sorghum aspirated grain fractions. The registrant does not wish to support corn and sorghum is the next highest potential contributor to grain dust residues based on the potential for residues to concentrate in the dust.

². Anticipated residues should normally be based on average residues in crop field trials. In this case the very conservative estimates of tolerance level residues in feeds, corrected for weighted average % crop treated, were used because the field trial data and label amendments necessary to properly evaluate the potential for residues to transfer to milk and meat are not available.

Anticipated residue in milk = transfer ratio * ATDB = (0.0002) * (0.11) = 0.000022 ppm

Anticipated residue in meat/fat = (0.0007) * (0.1) = 0.00007 ppm

Anticipated residue in liver/kidney/meat byproducts = (0.008) * (0.10) = 0.0008 ppm

Consumption Data

The acute module version 6.78 and the chronic module version 6.76 of DEEM™ were used for these risk assessments. Human consumption of the various commodities was estimated from the 1989 - 1992 USDA *Continuing Surveys of Food Intake for Individuals*.

Results

The estimates of chronic and acute dietary exposures from uses of disulfoton on food and feed crops are shown in Tables 6 and 7.

The chronic assessment incorporated average residues of disulfoton and its 5 metabolites of concern from monitoring data and field trials, adjusted for percent crop treated and for residue reduction or concentration from processing and cooking.

The acute assessment uses data from the same sources with residues being adjusted by processing factors where appropriate. Percent crop treated information was used to adjust residue levels for those foods that are blended extensively and also, where appropriate, used to predict the probability of residues occurring on samples of food.

Extensive sensitivity analysis has not been conducted for these analyses; however, it would be expected that the critical commodities would be high consumption items that have residues on them.

Table 6. Chronic Dietary Exposure Results for Disulfoton.

U.S. Environmental Protection Agency Ver. 6.76
 DEEM Chronic analysis for DISULFOTON (1989-92 data)
 Residue file name:DCwosX3.r96 Adjustment factor #2 used.
 Analysis Date 01-26-2000/09:30:25 Residue file dated: 01-26-2000/09:27:02/8
 Reference dose (RfD, CHRONIC) = .00013 mg/kg bw/day
 COMMENT 1: Disulfoton Chronic using FDA, PDP, field trials, %CT, & Processing factors

Total exposure by population subgroup		
Population Subgroup	Total Exposure	
	mg/kg body wt/day	Percent of RfD
U.S. Population (total)	0.000003	2.3%
U.S. Population (spring season)	0.000003	2.3%
U.S. Population (summer season)	0.000003	2.3%
U.S. Population (autumn season)	0.000003	2.3%
U.S. Population (winter season)	0.000003	2.5%
Northeast region	0.000003	2.3%
Midwest region	0.000003	2.4%
Southern region	0.000003	2.2%
Western region	0.000003	2.4%
Hispanics	0.000003	2.1%
Non-hispanic whites	0.000003	2.4%
Non-hispanic blacks	0.000002	1.8%
Non-hisp/non-white/non-black)	0.000003	2.6%
All infants (< 1 year)	0.000001	0.9%
Nursing infants	0.000000	0.3%
Non-nursing infants	0.000001	1.1%
Children 1-6 yrs	0.000005	3.5%
Children 7-12 yrs	0.000003	2.4%
Females 13-19(not preg or nursing)	0.000002	1.4%
Females 20+ (not preg or nursing)	0.000003	2.3%
Females 13-50 yrs	0.000003	2.0%
Females 13+ (preg/not nursing)	0.000002	1.3%
Females 13+ (nursing)	0.000002	1.9%
Males 13-19 yrs	0.000002	1.6%
Males 20+ yrs	0.000003	2.4%
Seniors 55+	0.000003	2.5%
Pacific Region	0.000003	2.5%

Table 7. Acute Dietary Exposure Results for Disulfoton

U.S. Environmental Protection Agency Ver. 6.78
 DEEM ACUTE analysis for DISULFOTON (1989-92 data)
 Residue file: DAwosX3.r96 Adjustment factor #2 NOT used.
 Analysis Date: 01-25-2000/16:08:09 Residue file dated: 01-25-2000/06:58:37/8
 Acute Reference Dose (aRfD) = 0.0025 mg/kg body-wt/day
 NOEL (Acute) = 0.25 mg/kg body-wt/day
 MC iterations = 1000 MC list in residue file MC seed = 10
 Run Comment: Disulfoton Acute using FDA, PDP, field trials, %CT, & Processing factors

Summary calculations:

5th Percentile		1st Percentile		0.1st Percentile					
Exposure	% aRfD	MOE	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE	

U.S. pop - all seasons:									
0.000031	1.23	8157	0.000065	2.60	3841	0.000176	7.04	1420	
All infants (<1 year):									
0.000043	1.71	5853	0.000074	2.95	3393	0.000218	8.73	1146	
Children (1-6 years):									
0.000063	2.54	3940	0.000116	4.65	2151	0.000239	9.58	1044	
Children (7-12 years):									
0.000041	1.63	6117	0.000076	3.04	3294	0.000203	8.13	1229	
Females (13-50 years):									
0.000021	0.84	11933	0.000043	1.74	5753	0.000128	5.13	1950	
Males (13-19 years):									
0.000029	1.15	8708	0.000048	1.92	5221	0.000146	5.85	1710	
Males (20+ years):									
0.000021	0.84	11836	0.000046	1.82	5492	0.000148	5.91	1692	
Seniors (55+):									
0.000019	0.78	12867	0.000045	1.78	5610	0.000184	7.37	1356	

List of Attachments

Attachment 1: Chronic Residue Information
 Attachment 2: Chronic DEEM Analysis
 Attachment 3: Chronic Critical Commodity Contribution Analysis for Children 1-6 yrs
 Attachment 4: Acute Residue Information
 Attachment 5: Acute DEEM Analysis
 Attachment 6: RDF Files

cc: WSmith (CEB1), RF.
 7509C:CEB1:WSmith:Rm 810C:CM2: 703-305-5353: 2/07/00.

ATTACHMENT 1: Chronic Residue Information

U.S. Environmental Protection Agency Ver. 6.76
 DEEM Chronic analysis for DISULFOTON (1989-92 data)
 Residue file name: C:\deem96\Disulfoton\DCwosX3.r96 Adjust. #2 used
 Analysis Date 01-26-2000 Residue file dated: 01-26-2000/09:27:02/8
 Reference dose (RfD, CHRONIC) = 0.00013 mg/kg bw/day
 COMMENT: Disulfoton Chronic using FDA, PDP, field trials, %CT, & Processing factors

Food Crop		RESIDUE	Adj.Factors	
Code	Grp Food Name	(ppm)	#1	#2
47 14	Pecans			
	11-Uncooked	0.050000	1.000	0.010
	13-Baked	0.050000	0.920	0.010
	14-Boiled	0.050000	0.920	0.010
112 O	Coffee			
	12-Cooked: NFS	0.098000	0.300	1.000
	14-Boiled	0.098000	0.300	1.000
125 O	Hops			
	99-Alcohol/Fermented/Distilled	0.075000	1.000	0.270
155 8	Peppers-sweet(garden)			
	11-Uncooked	0.000180	1.000	1.000
	12-Cooked: NFS	0.000180	0.920	1.000
	13-Baked	0.000180	0.920	1.000
	14-Boiled	0.000180	0.920	1.000
	31-Canned: NFS	0.000180	0.220	1.000
	32-Canned: Cooked	0.000180	0.220	1.000
	34-Canned: Boiled	0.000180	0.220	1.000
	42-Frozen: Cooked	0.000180	0.920	1.000
	51-Cured: NFS (smoked/pickled/saltd)	0.000180	1.000	1.000
156 8	Peppers-chilli incl jalapeno			
	11-Uncooked	0.067000	1.000	0.250
	12-Cooked: NFS	0.067000	0.920	0.250
	13-Baked	0.067000	0.920	0.250
	14-Boiled	0.067000	0.920	0.250
	15-Fried	0.067000	0.920	0.250
	31-Canned: NFS	0.067000	0.220	0.250
	32-Canned: Cooked	0.067000	0.220	0.250
	33-Canned: Baked	0.067000	0.220	0.250
	34-Canned: Boiled	0.067000	0.220	0.250
	42-Frozen: Cooked	0.067000	0.920	0.250
	51-Cured: NFS (smoked/pickled/saltd)	0.067000	1.000	0.250
	52-Cured: Cooked(smokd/pickld/saltd)	0.067000	1.000	0.250
	60-Canned: Cured	0.067000	0.220	0.250
157 8	Peppers-other			
	11-Uncooked	0.000180	1.000	1.000
158 8	Pimientos			
	12-Cooked: NFS	0.000180	0.920	1.000

	14-Boiled	0.000180	0.920	1.000
	31-Canned: NFS	0.000180	0.220	1.000
	60-Canned: Cured	0.000180	0.220	1.000
159 8	Tomatoes-whole			
	11-Uncooked	0.000045	1.000	1.000
	12-Cooked: NFS	0.000045	0.920	1.000
	13-Baked	0.000045	0.920	1.000
	14-Boiled	0.000045	0.920	1.000
	15-Fried	0.000045	0.920	1.000
	31-Canned: NFS	0.000045	0.220	1.000
	32-Canned: Cooked	0.000045	0.220	1.000
	33-Canned: Baked	0.000045	0.220	1.000
	34-Canned: Boiled	0.000045	0.220	1.000
	42-Frozen: Cooked	0.000045	0.920	1.000
160 8	Tomatoes-juice			
	31-Canned: NFS	0.000045	0.270	1.000
	32-Canned: Cooked	0.000045	0.250	1.000
	34-Canned: Boiled	0.000045	0.250	1.000
	42-Frozen: Cooked	0.000045	0.250	1.000
161 8	Tomatoes-puree			
	12-Cooked: NFS	0.000045	1.100	1.000
	14-Boiled	0.000045	1.100	1.000
	31-Canned: NFS	0.000045	1.200	1.000
	32-Canned: Cooked	0.000045	1.100	1.000
	33-Canned: Baked	0.000045	1.100	1.000
	34-Canned: Boiled	0.000045	1.100	1.000
	42-Frozen: Cooked	0.000045	1.100	1.000
162 8	Tomatoes-paste			
	14-Boiled	0.000045	1.560	1.000
	31-Canned: NFS	0.000045	1.700	1.000
	32-Canned: Cooked	0.000045	1.560	1.000
	33-Canned: Baked	0.000045	1.560	1.000
	34-Canned: Boiled	0.000045	1.560	1.000
	42-Frozen: Cooked	0.000045	1.560	1.000
163 8	Tomatoes-catsup			
	34-Canned: Boiled	0.000045	1.560	1.000
168 5A	Broccoli			
	11-Uncooked	0.000636	1.000	1.000
	12-Cooked: NFS	0.000636	0.920	1.000
	13-Baked	0.000636	0.920	1.000
	14-Boiled	0.000636	0.920	1.000
	15-Fried	0.000636	0.920	1.000
	32-Canned: Cooked	0.000636	0.220	1.000
	42-Frozen: Cooked	0.000636	0.920	1.000
	44-Frozen: Boiled	0.000636	0.920	1.000
169 5A	Brussels sprouts			
	14-Boiled	0.030000	0.920	0.200
	42-Frozen: Cooked	0.030000	0.920	0.200
170 5A	Cabbage-green and red			
	11-Uncooked	0.002000	1.000	1.000
	12-Cooked: NFS	0.002000	0.920	1.000
	13-Baked	0.002000	0.920	1.000

14-Boiled	0.002000	0.920	1.000
15-Fried	0.002000	0.920	1.000
31-Canned: NFS	0.002000	0.220	1.000
32-Canned: Cooked	0.002000	0.220	1.000
51-Cured: NFS (smoked/pickled/saltd)	0.002000	1.000	1.000
171 5A Cauliflower			
11-Uncooked	0.000770	1.000	1.000
12-Cooked: NFS	0.000770	0.920	1.000
14-Boiled	0.000770	0.920	1.000
15-Fried	0.000770	0.920	1.000
42-Frozen: Cooked	0.000770	0.920	1.000
176 4A Lettuce-leafy varieties			
11-Uncooked	0.000470	1.000	1.000
182 4A Lettuce-unspecified			
31-Canned: NFS	0.000470	0.220	1.000
192 4A Lettuce-head varieties			
11-Uncooked	0.000180	1.000	1.000
207 1C Potatoes/white-whole			
11-Uncooked	0.000900	1.000	1.000
12-Cooked: NFS	0.000900	0.600	1.000
13-Baked	0.000900	0.600	1.000
14-Boiled	0.000900	0.600	1.000
15-Fried	0.000900	0.240	1.000
31-Canned: NFS	0.000900	0.600	1.000
208 1C Potatoes/white-unspecified			
31-Canned: NFS	0.000900	0.600	1.000
209 1C Potatoes/white-peeled			
12-Cooked: NFS	0.000900	0.560	1.000
13-Baked	0.000900	0.560	1.000
14-Boiled	0.000900	0.560	1.000
15-Fried	0.000900	0.220	1.000
32-Canned: Cooked	0.000900	0.560	1.000
34-Canned: Boiled	0.000900	0.560	1.000
42-Frozen: Cooked	0.000900	0.560	1.000
43-Frozen: Baked	0.000900	0.560	1.000
45-Frozen: Fried	0.000900	0.220	1.000
210 1C Potatoes/white-dry			
12-Cooked: NFS	0.000900	1.260	1.000
14-Boiled	0.000900	1.260	1.000
15-Fried	0.000900	1.260	1.000
31-Canned: NFS	0.000900	1.260	1.000
34-Canned: Boiled	0.000900	1.260	1.000
42-Frozen: Cooked	0.000900	1.260	1.000
211 1C Potatoes/white-peel only			
13-Baked	0.000900	0.900	1.000
15-Fried	0.000900	0.900	1.000
227 6C Beans-dry-great northern			
32-Canned: Cooked	0.004500	0.220	0.010
228 6C Beans-dry-kidney			
12-Cooked: NFS	0.004500	0.920	0.010
13-Baked	0.004500	0.920	0.010

	14-Boiled	0.004500	0.920	0.010
	32-Canned: Cooked	0.004500	0.220	0.010
	34-Canned: Boiled	0.004500	0.220	0.010
	42-Frozen: Cooked	0.004500	0.920	0.010
229 6C	Beans-dry-lima			
	14-Boiled	0.004500	0.920	0.010
	32-Canned: Cooked	0.004500	0.220	0.010
230 6C	Beans-dry-navy (pea)			
	32-Canned: Cooked	0.004500	0.220	0.010
	34-Canned: Boiled	0.004500	0.220	0.010
231 6C	Beans-dry-other			
	12-Cooked: NFS	0.004500	0.920	0.010
	13-Baked	0.004500	0.920	0.010
	14-Boiled	0.004500	0.920	0.010
	15-Fried	0.004500	0.920	0.010
	34-Canned: Boiled	0.004500	0.220	0.010
232 6C	Beans-dry-pinto			
	12-Cooked: NFS	0.004500	0.920	0.010
	13-Baked	0.004500	0.920	0.010
	14-Boiled	0.004500	0.920	0.010
	15-Fried	0.004500	0.920	0.010
	32-Canned: Cooked	0.004500	0.220	0.010
	42-Frozen: Cooked	0.004500	0.920	0.010
233 6B	Beans-succulent-lima			
	11-Uncooked	0.015000	1.000	0.290
	12-Cooked: NFS	0.015000	0.920	0.290
	14-Boiled	0.015000	0.920	0.290
	32-Canned: Cooked	0.015000	0.220	0.050
	42-Frozen: Cooked	0.015000	0.920	0.050
	44-Frozen: Boiled	0.015000	0.920	0.050
234 6A	Beans-succulent-green			
	11-Uncooked	0.015000	1.000	0.050
	12-Cooked: NFS	0.015000	0.920	0.050
	14-Boiled	0.015000	0.920	0.050
	31-Canned: NFS	0.015000	0.220	0.050
	32-Canned: Cooked	0.015000	0.220	0.050
	34-Canned: Boiled	0.015000	0.920	0.050
	42-Frozen: Cooked	0.015000	0.920	0.050
	44-Frozen: Boiled	0.015000	0.920	0.050
	51-Cured: NFS (smoked/pickled/saltd)	0.015000	1.000	0.050
235 6A	Beans-succulent-other			
	34-Canned: Boiled	0.015000	0.220	0.050
236 6A	Beans-succulent-yellow/wax			
	14-Boiled	0.015000	0.920	0.050
	32-Canned: Cooked	0.015000	0.220	0.050
	42-Frozen: Cooked	0.015000	0.920	0.050
237 15	Corn/pop			
	12-Cooked: NFS	0.000050	0.920	1.000
	13-Baked	0.000050	0.920	1.000
238 15	Corn/sweet			
	11-Uncooked	0.000050	1.000	1.000

12-Cooked: NFS	0.000050	0.920	1.000
13-Baked	0.000050	0.920	1.000
14-Boiled	0.000050	0.920	1.000
32-Canned: Cooked	0.000050	0.220	1.000
34-Canned: Boiled	0.000050	0.220	1.000
35-Canned: Fried	0.000050	0.220	1.000
42-Frozen: Cooked	0.000050	0.920	1.000
240 6C Peas (garden)-dry			
12-Cooked: NFS	0.004500	0.920	0.010
14-Boiled	0.004500	0.920	0.010
31-Canned: NFS	0.004500	0.220	0.010
32-Canned: Cooked	0.004500	0.220	0.010
34-Canned: Boiled	0.004500	0.220	0.010
241 6AB Peas (garden)-green			
11-Uncooked	0.000045	1.000	1.000
12-Cooked: NFS	0.000045	0.920	1.000
13-Baked	0.000045	0.920	1.000
14-Boiled	0.000045	0.920	1.000
15-Fried	0.000045	0.920	1.000
31-Canned: NFS	0.000045	0.220	1.000
32-Canned: Cooked	0.000045	0.220	1.000
34-Canned: Boiled	0.000045	0.220	1.000
42-Frozen: Cooked	0.000045	0.920	1.000
44-Frozen: Boiled	0.000045	0.920	1.000
45-Frozen: Fried	0.000045	0.920	1.000
243 6C Lentils			
14-Boiled	0.004500	0.920	0.010
249 6C Beans-dry-broadbeans			
14-Boiled	0.004500	0.920	0.010
250 6B Beans-succulent-broadbeans	0.015000	1.000	0.050
251 6C Beans-dry-pigeon beans	0.004500	0.920	0.010
253 6 Beans-unspecified	0.015000	1.000	0.050
255 6A Soybeans-sprouted seeds			
14-Boiled	0.020000	0.300	0.010
256 Beans-dry-hyacinth	0.004500	0.920	0.010
257 Beans-succulent-hyacinth	0.015000	1.000	0.050
258 6C Beans-dry-blackeye peas/cowpea			
14-Boiled	0.004500	0.920	0.010
259 6C Beans-dry-garbanzo/chick pea			
12-Cooked: NFS	0.004500	0.920	0.010
14-Boiled	0.004500	0.920	0.010
15-Fried	0.004500	0.920	0.010
32-Canned: Cooked	0.004500	0.220	0.010
260 O Asparagus			
11-Uncooked	0.004500	1.000	0.400
14-Boiled	0.004500	0.920	0.400
32-Canned: Cooked	0.004500	0.920	0.400
42-Frozen: Cooked	0.004500	0.920	0.400
265 15 Barley			
11-Uncooked	0.058000	1.000	0.010
12-Cooked: NFS	0.058000	0.920	0.010
13-Baked	0.058000	0.920	0.010

14-Boiled	0.058000	0.920	0.010
15-Fried	0.058000	0.920	0.010
31-Canned: NFS	0.058000	0.220	0.010
32-Canned: Cooked	0.058000	0.220	0.010
34-Canned: Boiled	0.058000	0.220	0.010
99-Alcohol/Fermented/Distilled	0.058000	1.000	0.010
266 15 Corn grain-endosperm			
11-Uncooked	0.000050	0.240	1.000
12-Cooked: NFS	0.000050	0.220	1.000
13-Baked	0.000050	0.220	1.000
14-Boiled	0.000050	0.220	1.000
15-Fried	0.000050	0.220	1.000
31-Canned: NFS	0.000050	0.050	1.000
32-Canned: Cooked	0.000050	0.050	1.000
33-Canned: Baked	0.000050	0.050	1.000
34-Canned: Boiled	0.000050	0.050	1.000
41-Frozen: NFS	0.000050	0.240	1.000
42-Frozen: Cooked	0.000050	0.220	1.000
43-Frozen: Baked	0.000050	0.220	1.000
45-Frozen: Fried	0.000050	0.220	1.000
99-Alcohol/Fermented/Distilled	0.000050	0.240	1.000
267 15 Corn grain-bran			
12-Cooked: NFS	0.000050	0.920	1.000
13-Baked	0.000050	0.920	1.000
14-Boiled	0.000050	0.920	1.000
15-Fried	0.000050	0.920	1.000
31-Canned: NFS	0.000050	0.220	1.000
268 15 Corn grain/sugar/hfcs			
98-Refined	0.000050	1.500	1.000
269 15 Oats			
11-Uncooked	0.028000	1.000	0.010
12-Cooked: NFS	0.028000	0.920	0.010
13-Baked	0.028000	0.920	0.010
14-Boiled	0.028000	0.920	0.010
15-Fried	0.028000	0.920	0.010
31-Canned: NFS	0.028000	0.220	0.010
270 15 Rice-rough (brown)			
12-Cooked: NFS	0.260000	0.920	0.000
13-Baked	0.260000	0.920	0.000
14-Boiled	0.260000	0.920	0.000
99-Alcohol/Fermented/Distilled	0.260000	1.000	0.000
271 15 Rice-milled (white)			
12-Cooked: NFS	0.260000	0.920	0.000
13-Baked	0.260000	0.920	0.000
14-Boiled	0.260000	0.920	0.000
15-Fried	0.260000	0.920	0.000
31-Canned: NFS	0.260000	0.220	0.000
32-Canned: Cooked	0.260000	0.220	0.000
34-Canned: Boiled	0.260000	0.220	0.000
42-Frozen: Cooked	0.260000	0.920	0.000
99-Alcohol/Fermented/Distilled	0.260000	1.000	0.000
275 15 Sorghum (including milo)			

	14-Boiled	0.750000	0.920	0.010
276 15	Wheat-rough			
	11-Uncooked	0.009000	1.000	0.010
	12-Cooked: NFS	0.009000	0.920	0.010
	13-Baked	0.009000	0.920	0.010
	14-Boiled	0.009000	0.920	0.010
277 15	Wheat-germ			
	12-Cooked: NFS	0.009000	0.390	0.010
	13-Baked	0.009000	0.390	0.010
	14-Boiled	0.009000	0.390	0.010
278 15	Wheat-bran			
	11-Uncooked	0.009000	0.370	0.010
	12-Cooked: NFS	0.009000	0.340	0.010
	13-Baked	0.009000	0.340	0.010
279 15	Wheat-flour			
	11-Uncooked	0.009000	0.050	0.010
	12-Cooked: NFS	0.009000	0.050	0.010
	13-Baked	0.009000	0.050	0.010
	14-Boiled	0.009000	0.050	0.010
	15-Fried	0.009000	0.050	0.010
	31-Canned: NFS	0.009000	0.010	0.010
	32-Canned: Cooked	0.009000	0.010	0.010
	33-Canned: Baked	0.009000	0.010	0.010
	34-Canned: Boiled	0.009000	0.010	0.010
	41-Frozen: NFS	0.009000	0.050	0.010
	42-Frozen: Cooked	0.009000	0.050	0.010
	43-Frozen: Baked	0.009000	0.050	0.010
	45-Frozen: Fried	0.009000	0.050	0.010
	52-Cured: Cooked(smokd/pickld/saltd)	0.009000	0.050	0.010
289 15	Corn grain-oil			
	98-Refined	0.000050	0.240	1.000
290 O	Cottonseed-oil			
	98-Refined	0.050000	0.920	0.050
291 O	Cottonseed-meal			
	13-Baked	0.050000	0.920	0.050
293 O	Peanuts-oil			
	98-Refined	0.090000	0.920	0.030
297 6A	Soybeans-oil			
	98-Refined	0.020000	0.500	0.010
303 6A	Soybean-other	0.020000	1.000	0.010
304 6A	Soybeans-mature seeds dry			
	12-Cooked: NFS	0.020000	0.920	0.010
	13-Baked	0.020000	0.920	0.010
	14-Boiled	0.020000	0.920	0.010
	15-Fried	0.020000	0.920	0.010
	41-Frozen: NFS	0.020000	1.000	0.010
305 6A	Soybeans-flour (full fat)			
	12-Cooked: NFS	0.020000	0.460	0.010
	13-Baked	0.020000	0.460	0.010
	14-Boiled	0.020000	0.460	0.010
	34-Canned: Boiled	0.020000	0.110	0.010

	42-Frozen: Cooked	0.020000	0.460	0.010
306 6A	Soybeans-flour (low fat)			
	12-Cooked: NFS	0.020000	0.460	0.010
	13-Baked	0.020000	0.460	0.010
	15-Fried	0.020000	0.460	0.010
	31-Canned: NFS	0.020000	0.110	0.010
307 6A	Soybeans-flour (defatted)			
	12-Cooked: NFS	0.020000	0.460	0.010
	13-Baked	0.020000	0.460	0.010
	14-Boiled	0.020000	0.460	0.010
	15-Fried	0.020000	0.460	0.010
	31-Canned: NFS	0.020000	0.110	0.010
	34-Canned: Boiled	0.020000	0.110	0.010
	42-Frozen: Cooked	0.020000	0.460	0.010
	98-Refined	0.020000	0.500	0.010
318 D	Milk-nonfat solids			
	12-Cooked: NFS	0.000022	0.920	1.000
	13-Baked	0.000022	0.920	1.000
	14-Boiled	0.000022	0.920	1.000
	15-Fried	0.000022	0.920	1.000
	16-Pasteurized	0.000022	0.920	1.000
	18-Dried	0.000022	0.920	1.000
	31-Canned: NFS	0.000022	0.920	1.000
	32-Canned: Cooked	0.000022	0.920	1.000
	34-Canned: Boiled	0.000022	0.920	1.000
	41-Frozen: NFS	0.000022	0.920	1.000
	42-Frozen: Cooked	0.000022	0.920	1.000
	43-Frozen: Baked	0.000022	0.920	1.000
	45-Frozen: Fried	0.000022	0.920	1.000
	51-Cured: NFS (smoked/pickled/saltd)			
		0.000022	1.000	1.000
	52-Cured: Cooked(smokd/pickld/saltd)			
		0.000022	1.000	1.000
	98-Refined	0.000022	1.000	1.000
319 D	Milk-fat solids			
	12-Cooked: NFS	0.000022	0.920	1.000
	13-Baked	0.000022	0.920	1.000
	14-Boiled	0.000022	0.920	1.000
	15-Fried	0.000022	0.920	1.000
	16-Pasteurized	0.000022	0.920	1.000
	18-Dried	0.000022	0.920	1.000
	31-Canned: NFS	0.000022	0.920	1.000
	32-Canned: Cooked	0.000022	0.920	1.000
	34-Canned: Boiled	0.000022	0.920	1.000
	41-Frozen: NFS	0.000022	0.920	1.000
	42-Frozen: Cooked	0.000022	0.920	1.000
	45-Frozen: Fried	0.000022	0.920	1.000
	51-Cured: NFS (smoked/pickled/saltd)			
		0.000022	1.000	1.000
	52-Cured: Cooked(smokd/pickld/saltd)			
		0.000022	1.000	1.000
320 D	Milk sugar (lactose)			

12-Cooked: NFS	0.000022	0.920	1.000
13-Baked	0.000022	0.920	1.000
14-Boiled	0.000022	0.920	1.000
15-Fried	0.000022	0.920	1.000
16-Pasteurized	0.000022	0.920	1.000
18-Dried	0.000022	0.920	1.000
31-Canned: NFS	0.000022	0.920	1.000
32-Canned: Cooked	0.000022	0.920	1.000
34-Canned: Boiled	0.000022	0.920	1.000
41-Frozen: NFS	0.000022	0.920	1.000
42-Frozen: Cooked	0.000022	0.920	1.000
45-Frozen: Fried	0.000022	0.920	1.000
51-Cured: NFS (smoked/pickled/saltd)	0.000022	1.000	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000022	1.000	1.000
321 M Beef-meat byproducts			
12-Cooked: NFS	0.000800	0.920	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000800	1.000	1.000
322 M Beef-other organ meats			
12-Cooked: NFS	0.000800	0.920	1.000
14-Boiled	0.000800	0.920	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000800	1.000	1.000
323 M Beef-dried	0.000070	1.920	1.000
324 M Beef-fat w/o bones			
11-Uncooked	0.000070	1.000	1.000
12-Cooked: NFS	0.000070	0.920	1.000
13-Baked	0.000070	0.920	1.000
14-Boiled	0.000070	0.920	1.000
15-Fried	0.000070	0.920	1.000
31-Canned: NFS	0.000070	0.920	1.000
32-Canned: Cooked	0.000070	0.920	1.000
34-Canned: Boiled	0.000070	0.920	1.000
42-Frozen: Cooked	0.000070	0.920	1.000
45-Frozen: Fried	0.000070	0.920	1.000
51-Cured: NFS (smoked/pickled/saltd)	0.000070	1.000	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000070	1.000	1.000
59-Cured: Dried (smokd/pickld/saltd)	0.000070	1.000	1.000
325 M Beef-kidney			
12-Cooked: NFS	0.000800	0.920	1.000
15-Fried	0.000800	0.920	1.000
326 M Beef-liver			
12-Cooked: NFS	0.000800	0.920	1.000
14-Boiled	0.000800	0.920	1.000
15-Fried	0.000800	0.920	1.000
327 M Beef-lean (fat/free) w/o bones			
11-Uncooked	0.000070	1.000	1.000

12-Cooked: NFS	0.000070	0.920	1.000
13-Baked	0.000070	0.920	1.000
14-Boiled	0.000070	0.920	1.000
15-Fried	0.000070	0.920	1.000
31-Canned: NFS	0.000070	0.920	1.000
32-Canned: Cooked	0.000070	0.920	1.000
33-Canned: Baked	0.000070	0.920	1.000
34-Canned: Boiled	0.000070	0.920	1.000
42-Frozen: Cooked	0.000070	0.920	1.000
51-Cured: NFS (smoked/pickled/saltd)	0.000070	1.000	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000070	1.000	1.000
59-Cured: Dried (smokd/pickld/saltd)	0.000070	1.000	1.000
328 M Goat-meat byproducts	0.000800	0.920	1.000
329 M Goat-other organ meats	0.000800	0.920	1.000
330 M Goat-fat w/o bone			
13-Baked	0.000070	0.920	1.000
14-Boiled	0.000070	0.920	1.000
331 M Goat-kidney	0.000800	0.920	1.000
332 M Goat-liver	0.000800	0.920	1.000
333 M Goat-lean (fat/free) w/o bone			
13-Baked	0.000070	0.920	1.000
14-Boiled	0.000070	0.920	1.000
334 M Horsemeat	0.000070	0.920	1.000
336 M Sheep-meat byproducts	0.000800	0.920	1.000
337 M Sheep-other organ meats	0.000800	0.920	1.000
338 M Sheep-fat w/o bone			
12-Cooked: NFS	0.000070	0.920	1.000
13-Baked	0.000070	0.920	1.000
14-Boiled	0.000070	0.920	1.000
31-Canned: NFS	0.000070	0.920	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000070	1.000	1.000
339 M Sheep-kidney	0.000800	0.920	1.000
340 M Sheep-liver	0.000800	0.920	1.000
341 M Sheep-lean (fat free) w/o bone			
12-Cooked: NFS	0.000070	0.920	1.000
13-Baked	0.000070	0.920	1.000
14-Boiled	0.000070	0.920	1.000
15-Fried	0.000070	0.920	1.000
342 M Pork-meat byproducts			
12-Cooked: NFS	0.000800	0.920	1.000
14-Boiled	0.000800	0.920	1.000
15-Fried	0.000800	0.920	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000800	1.000	1.000
343 M Pork-other organ meats			
12-Cooked: NFS	0.000800	0.920	1.000
15-Fried	0.000800	0.920	1.000
344 M Pork-fat w/o bone			

11-Uncooked	0.000070	1.000	1.000
12-Cooked: NFS	0.000070	0.920	1.000
13-Baked	0.000070	0.920	1.000
14-Boiled	0.000070	0.920	1.000
15-Fried	0.000070	0.920	1.000
31-Canned: NFS	0.000070	0.920	1.000
32-Canned: Cooked	0.000070	0.920	1.000
34-Canned: Boiled	0.000070	0.920	1.000
42-Frozen: Cooked	0.000070	0.920	1.000
51-Cured: NFS (smoked/pickled/saltd)	0.000070	1.000	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000070	1.000	1.000
60-Canned: Cured	0.000070	0.920	1.000
345 M Pork-kidney	0.000800	0.920	1.000
346 M Pork-liver			
12-Cooked: NFS	0.000800	0.920	1.000
15-Fried	0.000800	0.920	1.000
347 M Pork-lean (fat free) w/o bone			
12-Cooked: NFS	0.000070	0.920	1.000
13-Baked	0.000070	0.920	1.000
14-Boiled	0.000070	0.920	1.000
15-Fried	0.000070	0.920	1.000
31-Canned: NFS	0.000070	0.920	1.000
32-Canned: Cooked	0.000070	0.920	1.000
34-Canned: Boiled	0.000070	0.920	1.000
42-Frozen: Cooked	0.000070	0.920	1.000
51-Cured: NFS (smoked/pickled/saltd)	0.000070	1.000	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000070	1.000	1.000
60-Canned: Cured	0.000070	0.920	1.000
383 5B Cabbage-savoy			
12-Cooked: NFS	0.002000	0.920	1.000
388 15 Corn grain/sugar-molasses			
12-Cooked: NFS	0.000050	1.380	1.000
41-Frozen: NFS	0.000050	1.500	1.000
398 D Milk-based water			
12-Cooked: NFS	0.000022	0.920	1.000
13-Baked	0.000022	0.920	1.000
14-Boiled	0.000022	0.920	1.000
15-Fried	0.000022	0.920	1.000
16-Pasteurized	0.000022	0.920	1.000
18-Dried	0.000022	0.920	1.000
31-Canned: NFS	0.000022	0.920	1.000
32-Canned: Cooked	0.000022	0.920	1.000
33-Canned: Baked	0.000022	0.920	1.000
34-Canned: Boiled	0.000022	0.920	1.000
41-Frozen: NFS	0.000022	0.920	1.000
42-Frozen: Cooked	0.000022	0.920	1.000
43-Frozen: Baked	0.000022	0.920	1.000
45-Frozen: Fried	0.000022	0.920	1.000

	52-Cured: Cooked(smokd/pickld/saltd)			
		0.000022	1.000	1.000
399 15	Oats-bran			
	11-Uncooked	0.028000	0.370	0.010
	12-Cooked: NFS	0.028000	0.340	0.010
	13-Baked	0.028000	34.000	0.010
	14-Boiled	0.028000	0.340	0.010
	15-Fried	0.028000	0.340	0.010
403 O	Peanuts-butter			
	13-Baked	0.090000	1.740	0.030
	14-Boiled	0.090000	1.740	0.030
405 6B	Peas-succulent/blackeye/cowpea			
	12-Cooked: NFS	0.000045	0.920	1.000
	14-Boiled	0.000045	0.920	1.000
	32-Canned: Cooked	0.000045	0.220	1.000
	42-Frozen: Cooked	0.000045	0.920	1.000
408 15	Rice-bran			
	11-Uncooked	0.260000	1.000	0.000
	12-Cooked: NFS	0.260000	0.920	0.000
	13-Baked	0.260000	0.920	0.000
	15-Fried	0.260000	0.920	0.000
	31-Canned: NFS	0.260000	0.220	0.000
409 15	Rice-wild			
	14-Boiled	0.260000	0.920	0.000
	42-Frozen: Cooked	0.260000	0.920	0.000
423 8	Tomatoes-dried			
	12-Cooked: NFS	0.000045	13.200	1.000
	15-Fried	0.000045	13.200	1.000
437 15	Wheat-germ oil			
	13-Baked	0.009000	0.390	0.010
451 5A	Broccoli-chinese			
	14-Boiled	0.000636	0.920	1.000
482 O	Soybeans-protein isolate			
	12-Cooked: NFS	0.020000	0.920	0.010
	13-Baked	0.020000	0.920	0.010
	14-Boiled	0.020000	0.920	0.010
	15-Fried	0.020000	0.920	0.010
	31-Canned: NFS	0.020000	0.220	0.010
	32-Canned: Cooked	0.020000	0.220	0.010
	33-Canned: Baked	0.020000	0.220	0.010
	34-Canned: Boiled	0.020000	0.220	0.010
	41-Frozen: NFS	0.020000	1.000	0.010
	42-Frozen: Cooked	0.020000	0.920	0.010
	51-Cured: NFS (smoked/pickled/saltd)			
		0.020000	1.000	0.010
940 O	Peanuts-hulled			
	12-Cooked: NFS	0.090000	0.920	0.030
	13-Baked	0.090000	0.920	0.030
	14-Boiled	0.090000	0.920	0.030
	15-Fried	0.090000	0.920	0.030
	41-Frozen: NFS	0.090000	1.000	0.030

ATTACHMENT 2: Disulfoton Chronic DEEM Analysis

U.S. Environmental Protection Agency Ver. 6.76
DEEM Chronic analysis for DISULFOTON (1989-92 data)
Residue file name: DCwosX3.r96 Adjustment factor #2 used.
Analysis Date 01-26-2000/09:30:25 Residue file dated: 01-26-2000/09:27:02/8
Reference dose (RfD, CHRONIC) = .00013 mg/kg bw/day
COMMENT 1: Using FDA, PDP, field trials, %CT, & Processing factors

Total exposure by population subgroup

Population Subgroup	Total Exposure	
	mg/kg body wt/day	Percent of Rfd
U.S. Population (total)	0.000003	2.3%
U.S. Population (spring season)	0.000003	2.3%
U.S. Population (summer season)	0.000003	2.3%
U.S. Population (autumn season)	0.000003	2.3%
U.S. Population (winter season)	0.000003	2.5%
Northeast region	0.000003	2.3%
Midwest region	0.000003	2.4%
Southern region	0.000003	2.2%
Western region	0.000003	2.4%
Hispanics	0.000003	2.1%
Non-hispanic whites	0.000003	2.4%
Non-hispanic blacks	0.000002	1.8%
Non-hisp/non-white/non-black)	0.000003	2.6%
All infants (< 1 year)	0.000001	0.9%
Nursing infants	0.000000	0.3%
Non-nursing infants	0.000001	1.1%
Children 1-6 yrs	0.000005	3.5%
Children 7-12 yrs	0.000003	2.4%
Females 13-19(not preg or nursing)	0.000002	1.4%
Females 20+ (not preg or nursing)	0.000003	2.3%
Females 13-50 yrs	0.000003	2.0%
Females 13+ (preg/not nursing)	0.000002	1.3%
Females 13+ (nursing)	0.000002	1.9%
Males 13-19 yrs	0.000002	1.6%
Males 20+ yrs	0.000003	2.4%
Seniors 55+	0.000003	2.5%
Pacific Region	0.000003	2.5%

ATTACHMENT 3: Chronic Critical Commodity Contribution Analysis for Children 1-6

U.S. Environmental Protection Agency Ver. 6.76
DEEM Chronic analysis for DISULFOTON (1989-92 data)
Residue file name:DCwosX3.r96 Adjustment factor #2 used.
Analysis Date 01-26-2000/09:30:34 Residue file dated: 01-26-2000/09:27:02/8
Reference dose (RfD, CHRONIC) = .00013 mg/kg bw/day
COMMENT 1: Using FDA, PDP, field trials, %CT, & Processing factors

**Critical Commodity Contribution Analysis for
Children 1-6 yrs**

Total Exposure =.0000045 mg/kg bw/day

Crop groups with total exposure contribution > 1%

Foods/Foodforms with exposure contribution > 1%

Crop group		-----Exposure Analysis-----		
Food		mg/kg	% of Total	Percent
Foodform		body wt/day	Exposure	of RfD

Crop Group = (O) Other				
Cottonseed-oil				
Refined		0.0000001	2.94%	0.10%
Peanuts-butter				
Baked		0.0000010	22.89%	0.79%

Total for crop group		0.0000013	28.85%	1.00%
Crop Group = (M) Meat				
Total for crop group		0.0000002	4.55%	0.16%
Crop Group = (D) Dairy Products				
Milk-based water				
Pasteurized		0.0000004	9.42%	0.33%

Total for crop group		0.0000005	12.05%	0.42%
Crop Group = (1) Root and Tuber Vegetables				
Potatoes/white-peeled				
Cooked: NFS		0.0000000	1.04%	0.04%
Baked		0.0000001	1.62%	0.06%
Boiled		0.0000003	5.76%	0.20%
Fried		0.0000001	1.16%	0.04%
Frozen: Fried		0.0000001	1.19%	0.04%

Total for crop group		0.0000006	14.25%	0.49%
Crop Group = (1C) Tuberous and Corm Vegetables				
Potatoes/white-peeled				
Cooked: NFS		0.0000000	1.04%	0.04%
Baked		0.0000001	1.62%	0.06%

Boiled	0.0000003	5.76%	0.20%
Fried	0.0000001	1.16%	0.04%
Frozen: Fried	0.0000001	1.19%	0.04%
<hr/>			
Total for crop group	0.0000006	14.25%	0.49%

Crop Group = (5) Brassica (Cole) Leafy Vegetables

Broccoli			
Boiled	0.0000002	3.47%	0.12%
Cabbage-green and red			
Uncooked	0.0000001	1.61%	0.06%
Boiled	0.0000001	1.47%	0.05%
<hr/>			
Total for crop group	0.0000003	7.27%	0.25%

Crop group	-----Exposure Analysis-----		
Food	mg/kg	% of Total	Percent
Foodform	body wt/day	Exposure	of RfD
<hr/>			

Crop Group = (5A) Brassica: Head and Stem

Broccoli			
Boiled	0.0000002	3.47%	0.12%
Cabbage-green and red			
Uncooked	0.0000001	1.61%	0.06%
Boiled	0.0000001	1.47%	0.05%
<hr/>			
Total for crop group	0.0000003	7.27%	0.25%

Crop Group = (6) Legume Vegetables (Succulent or Dried)

Beans-succulent-lima			
Boiled	0.0000001	1.36%	0.05%
Beans-succulent-green			
Boiled	0.0000002	5.43%	0.19%
Soybeans-oil			
Refined	0.0000001	1.56%	0.05%
<hr/>			
Total for crop group	0.0000004	9.41%	0.33%

Crop Group = (6A) Edible-pod Legume Vegetables

Beans-succulent-green			
Boiled	0.0000002	5.43%	0.19%
Soybeans-oil			
Refined	0.0000001	1.56%	0.05%
<hr/>			
Total for crop group	0.0000003	7.45%	0.26%

Crop Group = (6B) Succulent shelled peas and beans

Beans-succulent-lima			
Boiled	0.0000001	1.36%	0.05%
<hr/>			
Total for crop group	0.0000001	2.08%	0.07%
<hr/>			
Crop Group = (8) Fruiting Vegetables			
Peppers-chilli incl jalapeno			
Uncooked	0.0000001	3.07%	0.11%
Cooked: NFS	0.0000002	3.67%	0.13%
Baked	0.0000002	4.31%	0.15%
Boiled	0.0000001	2.04%	0.07%
<hr/>			
Total for crop group	0.0000007	15.29%	0.53%
<hr/>			
Crop Group = (15) Cereal Grains			
Corn grain/sugar/hfcs			
Refined	0.0000001	2.64%	0.09%
Oats			
Baked	0.0000001	1.29%	0.04%
<hr/>			
Total for crop group	0.0000003	7.61%	0.26%
<hr/>			
Total for crop groups listed above:	0.0000045	99.27%	3.4%
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ATTACHMENT 4: Disulfoton Acute Residue Information

Filename: DAwosX3.r96 Chemical name: Disulfoton
RfD(Chronic): 0.00013 mg/kg bw/day NOEL(Chronic): 0.013 mg/kg bw/day
RfD(Acute): 0.0025 mg/kg bw/day NOEL(Acute): 0.25 mg/kg bw/day
Date created/last modified: 01-25-2000 Program ver. 6.78
Comment: Monte Carlo using FDA, PDP, field trials, %CT, & Processing factors

RDF indices and file names for Monte Carlo Analysis

- 1 Asparag.rdf
- 2 BeansSuc1.rdf
- 3 BeansSuc2.rdf
- 4 BeansSuc3.rdf
- 5 Broccoli.rdf
- 6 BrusselS.rdf
- 7 Cabbage.rdf
- 8 Caulif.rdf
- 9 CornSw.rdf
- 10 Cotton.rdf
- 11 Hopswos.rdf
- 12 LettuceH.rdf
- 13 LettuceL.rdf
- 14 PeasSuc.rdf
- 15 Pecan.rdf
- 16 PepperCh.rdf
- 17 PepperSw.rdf
- 18 Potatoes.rdf
- 19 Rice.rdf
- 20 Tomato.rdf
- 21 Liver.rdf
- 22 Meat.rdf
- 23 Milk.rdf

Summary of Residue Distribution Files (RDF).

RDF #	File Name	N residues w freq's	N residues w/o freq's	N LODs	LOD Value	N Zeros
1	Asparag.rdf	0	11	0	0	9
2	BeansSuc1.rdf	0	1	0	0	4
3	BeansSuc2.rdf	0	1	0	0	9
4	BeansSuc3.rdf	0	1	0	0	1
5	Broccoli.rdf	1	2	0	0	244
6	BrusselS.rdf	0	6	0	0	9
7	Cabbage.rdf	1	4	0	0	463
8	Caulif.rdf	0	1	0	0	3
9	CornSw.rdf	0	1	0	0	99
10	Cotton.rdf	0	8	0	0	92
11	Hopswos.rdf	1	0	0	0	73
12	LettuceH.rdf	0	1	0	0	9
13	LettuceL.rdf	1	4	0	0	831
14	PeasSuc.rdf	0	7	0	0	93

15	Pecan.rdf	0	1	0	0	24
16	PepperCh.rdf	0	3	0	0	5
17	PepperSw.rdf	0	1	0	0	9
18	Potatoes.rdf	1	6	0	0	1054
19	Rice.rdf	0	1	0	0	16667
20	Tomato.rdf	0	1	0	0	99
21	Liver.rdf	0	8	0	0	92
22	Meat.rdf	0	8	0	0	92
23	Milk.rdf	0	8	0	0	92

Food Crop Code Grp Food Name	RESIDUE (ppm)	RDF #	Adj.Factors #1 #2	Comment
260 O Asparagus				
11-Uncooked	0.004500	1	1.000 0.400	
14-Boiled	0.004500	1	0.920 0.400	
32-Canned: Cooked	0.004500	1	0.920 0.400	
42-Frozen: Cooked	0.004500	1	0.920 0.400	
265 15 Barley				
11-Uncooked	0.000580	0	1.000 0.010	
12-Cooked: NFS	0.000580	0	0.920 0.010	
13-Baked	0.000580	0	0.920 0.010	
14-Boiled	0.000580	0	0.920 0.010	
15-Fried	0.000580	0	0.920 0.010	
31-Canned: NFS	0.000580	0	0.220 0.010	
32-Canned: Cooked	0.000580	0	0.220 0.010	
34-Canned: Boiled	0.000580	0	0.220 0.010	
99-Alcohol/Fermented/Distilled	0.000580	0	1.000 0.010	
258 6C Beans-dry-blackeye peas/cowpea				
14-Boiled	0.004500	0	0.920 0.010	
249 6C Beans-dry-broadbeans				
14-Boiled	0.004500	0	0.920 0.010	
259 6C Beans-dry-garbanzo/chick pea				
12-Cooked: NFS	0.004500	0	0.920 0.010	
14-Boiled	0.004500	0	0.920 0.010	
15-Fried	0.004500	0	0.920 0.010	
32-Canned: Cooked	0.004500	0	0.220 0.010	
227 6C Beans-dry-great northern				
32-Canned: Cooked	0.004500	0	0.220 0.010	
256 6C Beans-dry-hyacinth	0.004500	0	0.920 0.010	
228 6C Beans-dry-kidney				
12-Cooked: NFS	0.004500	0	0.920 0.010	
13-Baked	0.004500	0	0.920 0.010	
14-Boiled	0.004500	0	0.920 0.010	
32-Canned: Cooked	0.004500	0	0.220 0.010	
34-Canned: Boiled	0.004500	0	0.220 0.010	
42-Frozen: Cooked	0.004500	0	0.920 0.010	
229 6C Beans-dry-lima				
14-Boiled	0.004500	0	0.920 0.010	
32-Canned: Cooked	0.004500	0	0.220 0.010	
230 6C Beans-dry-navy (pea)				
32-Canned: Cooked	0.004500	0	0.220 0.010	
34-Canned: Boiled	0.004500	0	0.220 0.010	
231 6C Beans-dry-other				
12-Cooked: NFS	0.004500	0	0.920 0.010	
13-Baked	0.004500	0	0.920 0.010	
14-Boiled	0.004500	0	0.920 0.010	
15-Fried	0.004500	0	0.920 0.010	
34-Canned: Boiled	0.004500	0	0.220 0.010	
251 6C Beans-dry-pigeon beans	0.004500	0	0.920 0.010	
232 6C Beans-dry-pinto				
12-Cooked: NFS	0.004500	0	0.920 0.010	

13-Baked	0.004500	0	0.920	0.010
14-Boiled	0.004500	0	0.920	0.010
15-Fried	0.004500	0	0.920	0.010
32-Canned: Cooked	0.004500	0	0.220	0.010
42-Frozen: Cooked	0.004500	0	0.920	0.010
250 6B Beans-succulent-broadbeans	0.015000	2	1.000	0.050
234 6A Beans-succulent-green				
11-Uncooked	0.015000	2	1.000	0.050
12-Cooked: NFS	0.015000	2	0.920	0.050
14-Boiled	0.015000	2	0.920	0.050
31-Canned: NFS	0.015000	2	0.220	0.050
32-Canned: Cooked	0.015000	2	0.220	0.050
34-Canned: Boiled	0.015000	2	0.920	0.050
42-Frozen: Cooked	0.015000	2	0.920	0.050
44-Frozen: Boiled	0.015000	2	0.920	0.050
51-Cured: NFS (smoked/pickled/saltd)				
	0.015000	2	1.000	0.050
257 6 Beans-succulent-hyacinth	0.015000	2	1.000	0.050
233 6B Beans-succulent-lima				
11-Uncooked	0.015000	4	1.000	0.290
12-Cooked: NFS	0.015000	4	0.920	0.290
14-Boiled	0.015000	4	0.920	0.290
32-Canned: Cooked	0.015000	3	0.220	0.050
42-Frozen: Cooked	0.015000	3	0.920	0.050
44-Frozen: Boiled	0.015000	3	0.920	0.050
235 6A Beans-succulent-other				
34-Canned: Boiled	0.015000	2	0.220	0.050
236 6A Beans-succulent-yellow/wax				
14-Boiled	0.015000	2	0.920	0.050
32-Canned: Cooked	0.015000	2	0.220	0.050
42-Frozen: Cooked	0.015000	2	0.920	0.050
253 6 Beans-unspecified	0.015000	2	1.000	0.050
323 M Beef-dried	0.000070	22	1.920	1.000
324 M Beef-fat w/o bones				
11-Uncooked	0.000070	22	1.000	1.000
12-Cooked: NFS	0.000070	22	0.920	1.000
13-Baked	0.000070	22	0.920	1.000
14-Boiled	0.000070	22	0.920	1.000
15-Fried	0.000070	22	0.920	1.000
31-Canned: NFS	0.000070	22	0.920	1.000
32-Canned: Cooked	0.000070	22	0.920	1.000
34-Canned: Boiled	0.000070	22	0.920	1.000
42-Frozen: Cooked	0.000070	22	0.920	1.000
45-Frozen: Fried	0.000070	22	0.920	1.000
51-Cured: NFS (smoked/pickled/saltd)				
	0.000070	22	1.000	1.000
52-Cured: Cooked(smokd/pickld/saltd)				
	0.000070	22	1.000	1.000
59-Cured: Dried (smokd/pickld/saltd)				
	0.000070	22	1.000	1.000
325 M Beef-kidney				

	12-Cooked: NFS	0.000800	21	0.920	1.000
	15-Fried	0.000800	21	0.920	1.000
327 M	Beef-lean (fat/free) w/o bones				
	11-Uncooked	0.000070	22	1.000	1.000
	12-Cooked: NFS	0.000070	22	0.920	1.000
	13-Baked	0.000070	22	0.920	1.000
	14-Boiled	0.000070	22	0.920	1.000
	15-Fried	0.000070	22	0.920	1.000
	31-Canned: NFS	0.000070	22	0.920	1.000
	32-Canned: Cooked	0.000070	22	0.920	1.000
	33-Canned: Baked	0.000070	22	0.920	1.000
	34-Canned: Boiled	0.000070	22	0.920	1.000
	42-Frozen: Cooked	0.000070	22	0.920	1.000
	51-Cured: NFS (smoked/pickled/saltd)	0.000070	22	1.000	1.000
	52-Cured: Cooked(smokd/pickld/saltd)	0.000070	22	1.000	1.000
	59-Cured: Dried (smokd/pickld/saltd)	0.000070	22	1.000	1.000
326 M	Beef-liver				
	12-Cooked: NFS	0.000800	21	0.920	1.000
	14-Boiled	0.000800	21	0.920	1.000
	15-Fried	0.000800	21	0.920	1.000
321 M	Beef-meat byproducts				
	12-Cooked: NFS	0.000800	21	0.920	1.000
	52-Cured: Cooked(smokd/pickld/saltd)	0.000800	21	1.000	1.000
322 M	Beef-other organ meats				
	12-Cooked: NFS	0.000800	21	0.920	1.000
	14-Boiled	0.000800	21	0.920	1.000
	52-Cured: Cooked(smokd/pickld/saltd)	0.000800	21	1.000	1.000
168 5A	Broccoli				
	11-Uncooked	0.000636	5	1.000	1.000
	12-Cooked: NFS	0.000636	5	0.920	1.000
	13-Baked	0.000636	5	0.920	1.000
	14-Boiled	0.000636	5	0.920	1.000
	15-Fried	0.000636	5	0.920	1.000
	32-Canned: Cooked	0.000636	5	0.220	1.000
	42-Frozen: Cooked	0.000636	5	0.920	1.000
	44-Frozen: Boiled	0.000636	5	0.920	1.000
451 5A	Broccoli-chinese				
	14-Boiled	0.000636	5	0.920	1.000
169 5A	Brussels sprouts				
	14-Boiled	0.030000	6	0.920	0.200
	42-Frozen: Cooked	0.030000	6	0.920	0.200
170 5A	Cabbage-green and red				
	11-Uncooked	0.002000	7	1.000	1.000
	12-Cooked: NFS	0.002000	7	0.920	1.000
	13-Baked	0.002000	7	0.920	1.000
	14-Boiled	0.002000	7	0.920	1.000
	15-Fried	0.002000	7	0.920	1.000

	31-Canned: NFS	0.002000	7	0.220	1.000
	32-Canned: Cooked	0.002000	7	0.220	1.000
	51-Cured: NFS (smoked/pickled/saltd)	0.002000	7	1.000	1.000
383	5B Cabbage-savoy				
	12-Cooked: NFS	0.002000	7	0.920	1.000
171	5A Cauliflower				
	11-Uncooked	0.000770	8	1.000	1.000
	12-Cooked: NFS	0.000770	8	0.920	1.000
	14-Boiled	0.000770	8	0.920	1.000
	15-Fried	0.000770	8	0.920	1.000
	42-Frozen: Cooked	0.000770	8	0.920	1.000
112	O Coffee				
	12-Cooked: NFS	0.098000	0	0.300	1.000
	14-Boiled	0.098000	0	0.300	1.000
267	15 Corn grain-bran				
	12-Cooked: NFS	0.004500	0	0.920	1.000
	13-Baked	0.004500	0	0.920	1.000
	14-Boiled	0.004500	0	0.920	1.000
	15-Fried	0.004500	0	0.920	1.000
	31-Canned: NFS	0.004500	0	0.220	1.000
266	15 Corn grain-endosperm				
	11-Uncooked	0.004500	0	0.240	1.000
	12-Cooked: NFS	0.004500	0	0.220	1.000
	13-Baked	0.004500	0	0.220	1.000
	14-Boiled	0.004500	0	0.220	1.000
	15-Fried	0.004500	0	0.220	1.000
	31-Canned: NFS	0.004500	0	0.050	1.000
	32-Canned: Cooked	0.004500	0	0.050	1.000
	33-Canned: Baked	0.004500	0	0.050	1.000
	34-Canned: Boiled	0.004500	0	0.050	1.000
	41-Frozen: NFS	0.004500	0	0.240	1.000
	42-Frozen: Cooked	0.004500	0	0.220	1.000
	43-Frozen: Baked	0.004500	0	0.220	1.000
	45-Frozen: Fried	0.004500	0	0.220	1.000
	99-Alcohol/Fermented/Distilled	0.004500	0	0.240	1.000
289	15 Corn grain-oil				
	98-Refined	0.004500	0	0.240	1.000
268	15 Corn grain/sugar/hfcs				
	98-Refined	0.004500	0	1.500	1.000
388	15 Corn grain/sugar-molasses				
	12-Cooked: NFS	0.004500	0	1.380	1.000
	41-Frozen: NFS	0.004500	0	1.500	1.000
237	15 Corn/pop				
	12-Cooked: NFS	0.004500	0	0.920	1.000
	13-Baked	0.004500	0	0.920	1.000
238	15 Corn/sweet				
	11-Uncooked	0.000050	9	1.000	1.000
	12-Cooked: NFS	0.000050	9	0.920	1.000
	13-Baked	0.000050	9	0.920	1.000
	14-Boiled	0.000050	9	0.920	1.000
	32-Canned: Cooked	0.000050	9	0.220	1.000

	34-Canned: Boiled	0.000050	9	0.220	1.000
	35-Canned: Fried	0.000050	9	0.220	1.000
	42-Frozen: Cooked	0.000050	9	0.920	1.000
291 O	Cottonseed-meal				
	13-Baked	0.050000	10	0.920	0.050
290 O	Cottonseed-oil				
	98-Refined	0.050000	10	0.920	0.050
330 M	Goat-fat w/o bone				
	13-Baked	0.000070	22	0.920	1.000
	14-Boiled	0.000070	22	0.920	1.000
331 M	Goat-kidney	0.000800	21	0.920	1.000
333 M	Goat-lean (fat/free) w/o bone				
	13-Baked	0.000070	22	0.920	1.000
	14-Boiled	0.000070	22	0.920	1.000
332 M	Goat-liver	0.000800	21	0.920	1.000
328 M	Goat-meat byproducts	0.000800	21	0.920	1.000
329 M	Goat-other organ meats	0.000800	21	0.920	1.000
125 O	Hops				
	99-Alcohol/Fermented/Distilled	0.075000	11	1.000	0.270
334 M	Horsemeat	0.000070	22	0.920	1.000
243 6C	Lentils				
	14-Boiled	0.004500	0	0.920	0.010
182 4A	Lettuce-unspecified				
	31-Canned: NFS	0.000470	13	0.220	1.000
176 4A	Lettuce-leafy varieties				
	11-Uncooked	0.000470	13	1.000	1.000
192 4A	Lettuce-head varieties				
	11-Uncooked	0.000180	12	1.000	1.000
398 D	Milk-based water				
	12-Cooked: NFS	0.000022	23	0.920	1.000
	13-Baked	0.000022	23	0.920	1.000
	14-Boiled	0.000022	23	0.920	1.000
	15-Fried	0.000022	23	0.920	1.000
	16-Pasteurized	0.000022	23	0.920	1.000
	18-Dried	0.000022	23	0.920	1.000
	31-Canned: NFS	0.000022	23	0.920	1.000
	32-Canned: Cooked	0.000022	23	0.920	1.000
	33-Canned: Baked	0.000022	23	0.920	1.000
	34-Canned: Boiled	0.000022	23	0.920	1.000
	41-Frozen: NFS	0.000022	23	0.920	1.000
	42-Frozen: Cooked	0.000022	23	0.920	1.000
	43-Frozen: Baked	0.000022	23	0.920	1.000
	45-Frozen: Fried	0.000022	23	0.920	1.000
	52-Cured: Cooked(smokd/pickld/saltd)	0.000022	23	1.000	1.000
319 D	Milk-fat solids				
	12-Cooked: NFS	0.000022	23	0.920	1.000
	13-Baked	0.000022	23	0.920	1.000
	14-Boiled	0.000022	23	0.920	1.000
	15-Fried	0.000022	23	0.920	1.000
	16-Pasteurized	0.000022	23	0.920	1.000
	18-Dried	0.000022	23	0.920	1.000

31-Canned: NFS	0.000022	23	0.920	1.000
32-Canned: Cooked	0.000022	23	0.920	1.000
34-Canned: Boiled	0.000022	23	0.920	1.000
41-Frozen: NFS	0.000022	23	0.920	1.000
42-Frozen: Cooked	0.000022	23	0.920	1.000
45-Frozen: Fried	0.000022	23	0.920	1.000
51-Cured: NFS (smoked/pickled/saltd)	0.000022	23	1.000	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000022	23	1.000	1.000
318 D Milk-nonfat solids				
12-Cooked: NFS	0.000022	23	0.920	1.000
13-Baked	0.000022	23	0.920	1.000
14-Boiled	0.000022	23	0.920	1.000
15-Fried	0.000022	23	0.920	1.000
16-Pasteurized	0.000022	23	0.920	1.000
18-Dried	0.000022	23	0.920	1.000
31-Canned: NFS	0.000022	23	0.920	1.000
32-Canned: Cooked	0.000022	23	0.920	1.000
34-Canned: Boiled	0.000022	23	0.920	1.000
41-Frozen: NFS	0.000022	23	0.920	1.000
42-Frozen: Cooked	0.000022	23	0.920	1.000
43-Frozen: Baked	0.000022	23	0.920	1.000
45-Frozen: Fried	0.000022	23	0.920	1.000
51-Cured: NFS (smoked/pickled/saltd)	0.000022	23	1.000	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000022	23	1.000	1.000
98-Refined	0.000022	23	1.000	1.000
320 D Milk sugar (lactose)				
12-Cooked: NFS	0.000022	23	0.920	1.000
13-Baked	0.000022	23	0.920	1.000
14-Boiled	0.000022	23	0.920	1.000
15-Fried	0.000022	23	0.920	1.000
16-Pasteurized	0.000022	23	0.920	1.000
18-Dried	0.000022	23	0.920	1.000
31-Canned: NFS	0.000022	23	0.920	1.000
32-Canned: Cooked	0.000022	23	0.920	1.000
34-Canned: Boiled	0.000022	23	0.920	1.000
41-Frozen: NFS	0.000022	23	0.920	1.000
42-Frozen: Cooked	0.000022	23	0.920	1.000
45-Frozen: Fried	0.000022	23	0.920	1.000
51-Cured: NFS (smoked/pickled/saltd)	0.000022	23	1.000	1.000
52-Cured: Cooked(smokd/pickld/saltd)	0.000022	23	1.000	1.000
399 15 Oats-bran				
11-Uncooked	0.001100	0	0.370	0.010
12-Cooked: NFS	0.001100	0	0.340	0.010
13-Baked	0.001100	0	0.340	0.010
14-Boiled	0.001100	0	0.340	0.010
15-Fried	0.001100	0	0.340	0.010

269	15	Oats				
		11-Uncooked	0.001100	0	1.000	0.010
		12-Cooked: NFS	0.001100	0	0.920	0.010
		13-Baked	0.001100	0	0.920	0.010
		14-Boiled	0.001100	0	0.920	0.010
		15-Fried	0.001100	0	0.920	0.010
		31-Canned: NFS	0.001100	0	0.220	0.010
403	O	Peanuts-butter				
		13-Baked	0.004500	0	1.740	0.030
		14-Boiled	0.004500	0	1.740	0.030
940	O	Peanuts-hulled				
		12-Cooked: NFS	0.004500	0	0.920	0.030
		13-Baked	0.004500	0	0.920	0.030
		14-Boiled	0.004500	0	0.920	0.030
		15-Fried	0.004500	0	0.920	0.030
		41-Frozen: NFS	0.004500	0	1.000	0.030
293	O	Peanuts-oil				
		98-Refined	0.004500	0	0.920	0.030
240	6C	Peas (garden)-dry				
		12-Cooked: NFS	0.004500	0	0.920	0.010
		14-Boiled	0.004500	0	0.920	0.010
		31-Canned: NFS	0.004500	0	0.220	0.010
		32-Canned: Cooked	0.004500	0	0.220	0.010
		34-Canned: Boiled	0.004500	0	0.220	0.010
241	6AB	Peas (garden)-green				
		11-Uncooked	0.000045	14	1.000	1.000
		12-Cooked: NFS	0.000045	14	0.920	1.000
		13-Baked	0.000045	14	0.920	1.000
		14-Boiled	0.000045	14	0.920	1.000
		15-Fried	0.000045	14	0.920	1.000
		31-Canned: NFS	0.000045	14	0.220	1.000
		32-Canned: Cooked	0.000045	14	0.220	1.000
		34-Canned: Boiled	0.000045	14	0.220	1.000
		42-Frozen: Cooked	0.000045	14	0.920	1.000
		44-Frozen: Boiled	0.000045	14	0.920	1.000
		45-Frozen: Fried	0.000045	14	0.920	1.000
405	6B	Peas-succulent/blackeye/cowpea				
		12-Cooked: NFS	0.000045	14	0.920	1.000
		14-Boiled	0.000045	13	0.920	1.000
		32-Canned: Cooked	0.000045	13	0.220	1.000
		42-Frozen: Cooked	0.000045	13	0.920	1.000
47	14	Pecans				
		11-Uncooked	0.050000	15	1.000	0.010
		13-Baked	0.050000	15	0.920	0.010
		14-Boiled	0.050000	15	0.920	0.010
156	8	Peppers-chilli incl jalapeno				
		11-Uncooked	0.067000	16	1.000	0.250
		12-Cooked: NFS	0.067000	16	0.920	0.250
		13-Baked	0.067000	16	0.920	0.250
		14-Boiled	0.067000	16	0.920	0.250
		15-Fried	0.067000	16	0.920	0.250
		31-Canned: NFS	0.067000	16	0.220	0.250

	32-Canned: Cooked	0.067000	16	0.220	0.250
	33-Canned: Baked	0.067000	16	0.220	0.250
	34-Canned: Boiled	0.067000	16	0.220	0.250
	42-Frozen: Cooked	0.067000	16	0.920	0.250
	51-Cured: NFS (smoked/pickled/saltd)	0.067000	16	1.000	0.250
	52-Cured: Cooked(smokd/pickld/saltd)	0.067000	16	1.000	0.250
	60-Canned: Cured	0.067000	16	0.220	0.250
157	8 Peppers-other				
	11-Uncooked	0.000180	17	1.000	1.000
155	8 Peppers-sweet(garden)				
	11-Uncooked	0.000180	17	1.000	1.000
	12-Cooked: NFS	0.000180	17	0.920	1.000
	13-Baked	0.000180	17	0.920	1.000
	14-Boiled	0.000180	17	0.920	1.000
	31-Canned: NFS	0.000180	17	0.220	1.000
	32-Canned: Cooked	0.000180	17	0.220	1.000
	34-Canned: Boiled	0.000180	17	0.220	1.000
	42-Frozen: Cooked	0.000180	17	0.920	1.000
	51-Cured: NFS (smoked/pickled/saltd)	0.000180	17	1.000	1.000
158	8 Pimientos				
	12-Cooked: NFS	0.000180	17	0.920	1.000
	14-Boiled	0.000180	17	0.920	1.000
	31-Canned: NFS	0.000180	17	0.220	1.000
	60-Canned: Cured	0.000180	17	0.220	1.000
344	M Pork-fat w/o bone				
	11-Uncooked	0.000070	22	1.000	1.000
	12-Cooked: NFS	0.000070	22	0.920	1.000
	13-Baked	0.000070	22	0.920	1.000
	14-Boiled	0.000070	22	0.920	1.000
	15-Fried	0.000070	22	0.920	1.000
	31-Canned: NFS	0.000070	22	0.920	1.000
	32-Canned: Cooked	0.000070	22	0.920	1.000
	34-Canned: Boiled	0.000070	22	0.920	1.000
	42-Frozen: Cooked	0.000070	22	0.920	1.000
	51-Cured: NFS (smoked/pickled/saltd)	0.000070	22	1.000	1.000
	52-Cured: Cooked(smokd/pickld/saltd)	0.000070	22	1.000	1.000
	60-Canned: Cured	0.000070	22	0.920	1.000
345	M Pork-kidney	0.000800	21	0.920	1.000
347	M Pork-lean (fat free) w/o bone				
	12-Cooked: NFS	0.000070	22	0.920	1.000
	13-Baked	0.000070	22	0.920	1.000
	14-Boiled	0.000070	22	0.920	1.000
	15-Fried	0.000070	22	0.920	1.000
	31-Canned: NFS	0.000070	22	0.920	1.000
	32-Canned: Cooked	0.000070	22	0.920	1.000
	34-Canned: Boiled	0.000070	22	0.920	1.000

	42-Frozen: Cooked	0.000070	22	0.920	1.000
	51-Cured: NFS (smoked/pickled/saltd)	0.000070	22	1.000	1.000
	52-Cured: Cooked(smokd/pickld/saltd)	0.000070	22	1.000	1.000
	60-Canned: Cured	0.000070	22	0.920	1.000
346 M	Pork-liver				
	12-Cooked: NFS	0.000800	21	0.920	1.000
	15-Fried	0.000800	21	0.920	1.000
342 M	Pork-meat byproducts				
	12-Cooked: NFS	0.000800	21	0.920	1.000
	14-Boiled	0.000800	21	0.920	1.000
	15-Fried	0.000800	21	0.920	1.000
	52-Cured: Cooked(smokd/pickld/saltd)	0.000800	21	1.000	1.000
343 M	Pork-other organ meats				
	12-Cooked: NFS	0.000800	21	0.920	1.000
	15-Fried	0.000800	21	0.920	1.000
210 1C	Potatoes/white-dry				
	12-Cooked: NFS	0.000900	0	1.260	1.000
	14-Boiled	0.000900	0	1.260	1.000
	15-Fried	0.000900	0	1.260	1.000
	31-Canned: NFS	0.000900	0	1.260	1.000
	34-Canned: Boiled	0.000900	0	1.260	1.000
	42-Frozen: Cooked	0.000900	0	1.260	1.000
209 1C	Potatoes/white-peeled				
	12-Cooked: NFS	0.000900	18	0.560	1.000
	13-Baked	0.000900	18	0.560	1.000
	14-Boiled	0.000900	18	0.560	1.000
	15-Fried	0.000900	18	0.220	1.000
	32-Canned: Cooked	0.000900	18	0.560	1.000
	34-Canned: Boiled	0.000900	18	0.560	1.000
	42-Frozen: Cooked	0.000900	18	0.560	1.000
	43-Frozen: Baked	0.000900	18	0.560	1.000
	45-Frozen: Fried	0.000900	18	0.220	1.000
211 1C	Potatoes/white-peel only				
	13-Baked	0.000900	18	0.900	1.000
	15-Fried	0.000900	18	0.900	1.000
208 1C	Potatoes/white-unspecified				
	31-Canned: NFS	0.000900	18	0.600	1.000
207 1C	Potatoes/white-whole				
	11-Uncooked	0.000900	18	1.000	1.000
	12-Cooked: NFS	0.000900	18	0.600	1.000
	13-Baked	0.000900	18	0.600	1.000
	14-Boiled	0.000900	18	0.600	1.000
	15-Fried	0.000900	18	0.240	1.000
	31-Canned: NFS	0.000900	18	0.600	1.000
408 15	Rice-bran				
	11-Uncooked	0.260000	19	1.000	0.000
	12-Cooked: NFS	0.260000	19	0.920	0.000
	13-Baked	0.260000	19	0.920	0.000
	15-Fried	0.260000	19	0.920	0.000

	31-Canned: NFS	0.260000	19	0.220	0.000
271	15 Rice-milled (white)				
	12-Cooked: NFS	0.260000	19	0.920	0.000
	13-Baked	0.260000	19	0.920	0.000
	14-Boiled	0.260000	19	0.920	0.000
	15-Fried	0.260000	19	0.920	0.000
	31-Canned: NFS	0.260000	19	0.220	0.000
	32-Canned: Cooked	0.260000	19	0.220	0.000
	34-Canned: Boiled	0.260000	19	0.220	0.000
	42-Frozen: Cooked	0.260000	19	0.920	0.000
	99-Alcohol/Fermented/Distilled	0.260000	19	1.000	0.000
270	15 Rice-rough (brown)				
	12-Cooked: NFS	0.260000	19	0.920	0.000
	13-Baked	0.260000	19	0.920	0.000
	14-Boiled	0.260000	19	0.920	0.000
	99-Alcohol/Fermented/Distilled	0.260000	19	1.000	0.000
409	15 Rice-wild				
	14-Boiled	0.260000	19	0.920	0.000
	42-Frozen: Cooked	0.260000	19	0.920	0.000
338	M Sheep-fat w/o bone				
	12-Cooked: NFS	0.000070	22	0.920	1.000
	13-Baked	0.000070	22	0.920	1.000
	14-Boiled	0.000070	22	0.920	1.000
	31-Canned: NFS	0.000070	22	0.920	1.000
	52-Cured: Cooked(smokd/pickld/saltd)				
		0.000070	22	1.000	1.000
339	M Sheep-kidney	0.000800	21	0.920	1.000
341	M Sheep-lean (fat free) w/o bone				
	12-Cooked: NFS	0.000070	22	0.920	1.000
	13-Baked	0.000070	22	0.920	1.000
	14-Boiled	0.000070	22	0.920	1.000
	15-Fried	0.000070	22	0.920	1.000
340	M Sheep-liver	0.000800	21	0.920	1.000
336	M Sheep-meat byproducts	0.000800	21	0.920	1.000
337	M Sheep-other organ meats	0.000800	21	0.920	1.000
275	15 Sorghum (including milo)				
	14-Boiled	0.007500	0	0.920	0.010
303	6A Soybean-other	0.000200	0	1.000	0.010
307	6A Soybeans-flour (defatted)				
	12-Cooked: NFS	0.000200	0	0.460	0.010
	13-Baked	0.000200	0	0.460	0.010
	14-Boiled	0.000200	0	0.460	0.010
	15-Fried	0.000200	0	0.460	0.010
	31-Canned: NFS	0.000200	0	0.110	0.010
	34-Canned: Boiled	0.000200	0	0.110	0.010
	42-Frozen: Cooked	0.000200	0	0.460	0.010
	98-Refined	0.000200	0	0.500	0.010
306	6A Soybeans-flour (low fat)				
	12-Cooked: NFS	0.000200	0	0.460	0.010
	13-Baked	0.000200	0	0.460	0.010
	15-Fried	0.000200	0	0.460	0.010
	31-Canned: NFS	0.000200	0	0.110	0.010

305	6A	Soybeans-flour (full fat)				
		12-Cooked: NFS	0.000200	0	0.460	0.010
		13-Baked	0.000200	0	0.460	0.010
		14-Boiled	0.000200	0	0.460	0.010
		34-Canned: Boiled	0.000200	0	0.110	0.010
		42-Frozen: Cooked	0.000200	0	0.460	0.010
304	6A	Soybeans-mature seeds dry				
		12-Cooked: NFS	0.000200	0	0.920	0.010
		13-Baked	0.000200	0	0.920	0.010
		14-Boiled	0.000200	0	0.920	0.010
		15-Fried	0.000200	0	0.920	0.010
		41-Frozen: NFS	0.000200	0	1.000	0.010
297	6A	Soybeans-oil				
		98-Refined	0.000200	0	0.500	0.010
482	O	Soybeans-protein isolate				
		12-Cooked: NFS	0.000200	0	0.920	0.010
		13-Baked	0.000200	0	0.920	0.010
		14-Boiled	0.000200	0	0.920	0.010
		15-Fried	0.000200	0	0.920	0.010
		31-Canned: NFS	0.000200	0	0.220	0.010
		32-Canned: Cooked	0.000200	0	0.220	0.010
		33-Canned: Baked	0.000200	0	0.220	0.010
		34-Canned: Boiled	0.000200	0	0.220	0.010
		41-Frozen: NFS	0.000200	0	1.000	0.010
		42-Frozen: Cooked	0.000200	0	0.920	0.010
		51-Cured: NFS (smoked/pickled/saltd)	0.000200	0	1.000	0.010
255	6A	Soybeans-sprouted seeds				
		14-Boiled	0.000200	0	0.300	0.010
163	8	Tomatoes-catsup				
		34-Canned: Boiled	0.000045	0	1.560	1.000
423	8	Tomatoes-dried				
		12-Cooked: NFS	0.000045	0	13.200	1.000
		15-Fried	0.000045	0	13.200	1.000
160	8	Tomatoes-juice				
		31-Canned: NFS	0.000045	20	0.270	1.000
		32-Canned: Cooked	0.000045	20	0.250	1.000
		34-Canned: Boiled	0.000045	20	0.250	1.000
		42-Frozen: Cooked	0.000045	20	0.250	1.000
162	8	Tomatoes-paste				
		14-Boiled	0.000045	0	1.560	1.000
		31-Canned: NFS	0.000045	0	1.700	1.000
		32-Canned: Cooked	0.000045	0	1.560	1.000
		33-Canned: Baked	0.000045	0	1.560	1.000
		34-Canned: Boiled	0.000045	0	1.560	1.000
		42-Frozen: Cooked	0.000045	0	1.560	1.000
161	8	Tomatoes-puree				
		12-Cooked: NFS	0.000045	0	1.100	1.000
		14-Boiled	0.000045	0	1.100	1.000
		31-Canned: NFS	0.000045	0	1.200	1.000
		32-Canned: Cooked	0.000045	0	1.100	1.000
		33-Canned: Baked	0.000045	0	1.100	1.000

	34-Canned: Boiled	0.000045	0	1.100	1.000
	42-Frozen: Cooked	0.000045	0	1.100	1.000
159	8 Tomatoes-whole				
	11-Uncooked	0.000045	20	1.000	1.000
	12-Cooked: NFS	0.000045	20	0.920	1.000
	13-Baked	0.000045	20	0.920	1.000
	14-Boiled	0.000045	20	0.920	1.000
	15-Fried	0.000045	20	0.920	1.000
	31-Canned: NFS	0.000045	20	0.220	1.000
	32-Canned: Cooked	0.000045	20	0.220	1.000
	33-Canned: Baked	0.000045	20	0.220	1.000
	34-Canned: Boiled	0.000045	20	0.220	1.000
	42-Frozen: Cooked	0.000045	20	0.920	1.000
278	15 Wheat-bran				
	11-Uncooked	0.000090	0	0.370	0.010
	12-Cooked: NFS	0.000090	0	0.340	0.010
	13-Baked	0.000090	0	0.340	0.010
279	15 Wheat-flour				
	11-Uncooked	0.000090	0	0.050	0.010
	12-Cooked: NFS	0.000090	0	0.050	0.010
	13-Baked	0.000090	0	0.050	0.010
	14-Boiled	0.000090	0	0.050	0.010
	15-Fried	0.000090	0	0.050	0.010
	31-Canned: NFS	0.000090	0	0.010	0.010
	32-Canned: Cooked	0.000090	0	0.010	0.010
	33-Canned: Baked	0.000090	0	0.010	0.010
	34-Canned: Boiled	0.000090	0	0.010	0.010
	41-Frozen: NFS	0.000090	0	0.050	0.010
	42-Frozen: Cooked	0.000090	0	0.050	0.010
	43-Frozen: Baked	0.000090	0	0.050	0.010
	45-Frozen: Fried	0.000090	0	0.050	0.010
	52-Cured: Cooked(smokd/pickld/saltd)	0.000090	0	0.050	0.010
277	15 Wheat-germ				
	12-Cooked: NFS	0.000090	0	0.390	0.010
	13-Baked	0.000090	0	0.390	0.010
	14-Boiled	0.000090	0	0.390	0.010
437	15 Wheat-germ oil				
	13-Baked	0.000090	0	0.390	0.010
276	15 Wheat-rough				
	11-Uncooked	0.000090	0	1.000	0.010
	12-Cooked: NFS	0.000090	0	0.920	0.010
	13-Baked	0.000090	0	0.920	0.010
	14-Boiled	0.000090	0	0.920	0.010

ATTACHMENT 5: Acute DEEM Analysis

U.S. Environmental Protection Agency Ver. 6.78
DEEM ACUTE analysis for DISULFOTON (1989-92 data)
Residue file: DAwosX3.r96 Adjustment factor #2 NOT used.
Analysis Date: 01-25-2000/16:08:09 Residue file dated: 01-25-2000/06:58:37/8
Acute Reference Dose (aRfD) = 0.0025 mg/kg body-wt/day
NOEL (Acute) = 0.25 mg/kg body-wt/day
MC iterations = 1000 MC list in residue file MC seed = 10
Run Comment: Disulfoton Acute using FDA, PDP, field trials, %CT, & Processing factors

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Summary calculations:

	5th Percentile			1st Percentile			0.1st Percentile			
	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE	

U.S. pop - all seasons:										
	0.000031	1.23	8157	0.000065	2.60	3841	0.000176	7.04	1420	
All infants (<1 year):										
	0.000043	1.71	5853	0.000074	2.95	3393	0.000218	8.73	1146	
Children (1-6 years):										
	0.000063	2.54	3940	0.000116	4.65	2151	0.000239	9.58	1044	
Children (7-12 years):										
	0.000041	1.63	6117	0.000076	3.04	3294	0.000203	8.13	1229	
Females (13-50 years):										
	0.000021	0.84	11933	0.000043	1.74	5753	0.000128	5.13	1950	
Males (13-19 years):										
	0.000029	1.15	8708	0.000048	1.92	5221	0.000146	5.85	1710	
Males (20+ years):										
	0.000021	0.84	11836	0.000046	1.82	5492	0.000148	5.91	1692	
Seniors (55+):										
	0.000019	0.78	12867	0.000045	1.78	5610	0.000184	7.37	1356	

U.S. Environmental Protection Agency Ver. 6.78
 DEEM ACUTE analysis for DISULFOTON (1989-92 data)
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 Analysis Date: 01-25-2000/16:08:09 Residue file dated: 01-25-2000/06:58:37/8
 Acute Reference Dose (aRfD) = 0.0025 mg/kg body-wt/day
 NOEL (Acute) = 0.25 mg/kg body-wt/day
 MC iterations = 1000 MC list in residue file MC seed = 10
 Run Comment: Disulfoton Acute using FDA, PDP, field trials, %CT, & Processing factors

U.S. pop - all seasons Daily Exposure Analysis 1/
 ----- (mg/kg body-weight/day)
 per Capita per User

 Mean 0.000010 0.000010
 Standard Deviation 0.000023 0.000023
 Margin of Exposure 2/ 24,210 24,139
 Percent of aRfD 0.41 0.41

Percent of Person-Days that are User-Days = 99.71%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000002	0.07	143,227	10.00	0.000021	0.84	11,883
80.00	0.000003	0.12	85,457	5.00	0.000031	1.23	8,150
70.00	0.000004	0.16	62,435	2.50	0.000043	1.71	5,855
60.00	0.000005	0.21	48,547	1.00	0.000065	2.61	3,838
50.00	0.000006	0.26	38,560	0.50	0.000088	3.52	2,841
40.00	0.000008	0.32	30,886	0.25	0.000117	4.69	2,132
30.00	0.000010	0.41	24,383	0.10	0.000176	7.04	1,419
20.00	0.000014	0.55	18,221				

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000002	0.07	147,142	10.00	0.000021	0.84	11,895
80.00	0.000003	0.12	86,280	5.00	0.000031	1.23	8,157
70.00	0.000004	0.16	62,785	2.50	0.000043	1.71	5,860
60.00	0.000005	0.21	48,739	1.00	0.000065	2.60	3,841
50.00	0.000006	0.26	38,678	0.50	0.000088	3.52	2,843
40.00	0.000008	0.32	30,959	0.25	0.000117	4.69	2,133
30.00	0.000010	0.41	24,428	0.10	0.000176	7.04	1,420
20.00	0.000014	0.55	18,248				

- 1/ Analysis based on all three-day participant records in CSFII 1989-92 survey.
- 2/ Margin of Exposure = NOEL/ Dietary Exposure.

U.S. Environmental Protection Agency Ver. 6.78
 DEEM ACUTE analysis for DISULFOTON (1989-92 data)
 Residue file: DAwosX3.r96 Adjustment factor #2 NOT used.
 Analysis Date: 01-25-2000/16:08:09 Residue file dated: 01-25-2000/06:58:37/8
 Acute Reference Dose (aRfD) = 0.0025 mg/kg body-wt/day
 NOEL (Acute) = 0.25 mg/kg body-wt/day

All infants (<1 year) Daily Exposure Analysis
 ----- (mg/kg body-weight/day)
 per Capita per User

Mean	0.000016	0.000018
Standard Deviation	0.000022	0.000022
Margin of Exposure	15,418	13,652
Percent of aRfD	0.65	0.73

Percent of Person-Days that are User-Days = 88.54%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000000	0.01	829,813	10.00	0.000041	1.63	6,149
80.00	0.000002	0.08	129,438	5.00	0.000043	1.72	5,811
70.00	0.000005	0.21	47,972	2.50	0.000055	2.19	4,563
60.00	0.000007	0.29	35,055	1.00	0.000075	3.02	3,312
50.00	0.000011	0.42	23,613	0.50	0.000110	4.40	2,271
40.00	0.000021	0.82	12,187	0.25	0.000173	6.93	1,442
30.00	0.000027	1.09	9,199	0.10	0.000222	8.89	1,124
20.00	0.000035	1.38	7,235				

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000000	0.00	>1,000,000	10.00	0.000040	1.59	6,271
80.00	0.000000	0.01	860,012	5.00	0.000043	1.71	5,853
70.00	0.000002	0.09	111,575	2.50	0.000053	2.13	4,694
60.00	0.000006	0.23	44,320	1.00	0.000074	2.95	3,393
50.00	0.000008	0.33	29,934	0.50	0.000106	4.22	2,367
40.00	0.000015	0.62	16,259	0.25	0.000165	6.61	1,513
30.00	0.000025	0.98	10,167	0.10	0.000218	8.73	1,146
20.00	0.000033	1.31	7,659				

U.S. Environmental Protection Agency Ver. 6.78
 DEEM ACUTE analysis for DISULFOTON (1989-92 data)
 Residue file: DAwosX3.r96 Adjustment factor #2 NOT used.
 Analysis Date: 01-25-2000/16:08:09 Residue file dated: 01-25-2000/06:58:37/8
 Acute Reference Dose (aRfD) = 0.0025 mg/kg body-wt/day
 NOEL (Acute) = 0.25 mg/kg body-wt/day

Children (1-6 years) Daily Exposure Analysis
 ----- (mg/kg body-weight/day)
 per Capita per User

Mean	0.000022	0.000022
Standard Deviation	0.000038	0.000038
Margin of Exposure	11,185	11,182
Percent of aRfD	0.89	0.89

Percent of Person-Days that are User-Days = 99.97%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000004	0.16	60,722	10.00	0.000046	1.84	5,436
80.00	0.000007	0.29	34,364	5.00	0.000063	2.54	3,939
70.00	0.000010	0.40	25,297	2.50	0.000085	3.40	2,940
60.00	0.000013	0.50	19,895	1.00	0.000116	4.65	2,151
50.00	0.000016	0.62	16,038	0.50	0.000141	5.66	1,767
40.00	0.000019	0.77	13,071	0.25	0.000171	6.83	1,464
30.00	0.000024	0.96	10,443	0.10	0.000239	9.58	1,044
20.00	0.000031	1.25	8,026				

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000004	0.16	60,886	10.00	0.000046	1.84	5,437
80.00	0.000007	0.29	34,399	5.00	0.000063	2.54	3,940
70.00	0.000010	0.40	25,311	2.50	0.000085	3.40	2,940
60.00	0.000013	0.50	19,903	1.00	0.000116	4.65	2,151
50.00	0.000016	0.62	16,042	0.50	0.000141	5.66	1,767
40.00	0.000019	0.76	13,073	0.25	0.000171	6.83	1,465
30.00	0.000024	0.96	10,445	0.10	0.000239	9.58	1,044
20.00	0.000031	1.25	8,027				

U.S. Environmental Protection Agency Ver. 6.78
 DEEM ACUTE analysis for DISULFOTON (1989-92 data)
 Residue file: DAwosX3.r96 Adjustment factor #2 NOT used.
 Analysis Date: 01-25-2000/16:08:09 Residue file dated: 01-25-2000/06:58:37/8
 Acute Reference Dose (aRfD) = 0.0025 mg/kg body-wt/day
 NOEL (Acute) = 0.25 mg/kg body-wt/day

Children (7-12 years) Daily Exposure Analysis

 (mg/kg body-weight/day)
 per Capita per User

Mean	0.000016	0.000016
Standard Deviation	0.000027	0.000027
Margin of Exposure	16,006	16,002
Percent of aRfD	0.62	0.62

Percent of Person-Days that are User-Days = 99.98%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000004	0.14	70,215	10.00	0.000030	1.19	8,403
80.00	0.000005	0.22	46,133	5.00	0.000041	1.63	6,116
70.00	0.000007	0.29	34,758	2.50	0.000054	2.15	4,646
60.00	0.000009	0.37	27,306	1.00	0.000076	3.04	3,294
50.00	0.000012	0.46	21,737	0.50	0.000098	3.93	2,545
40.00	0.000014	0.56	17,844	0.25	0.000129	5.17	1,933
30.00	0.000017	0.68	14,625	0.10	0.000203	8.13	1,229
20.00	0.000022	0.87	11,434				

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000004	0.14	70,370	10.00	0.000030	1.19	8,404
80.00	0.000005	0.22	46,164	5.00	0.000041	1.63	6,117
70.00	0.000007	0.29	34,773	2.50	0.000054	2.15	4,647
60.00	0.000009	0.37	27,315	1.00	0.000076	3.04	3,294
50.00	0.000011	0.46	21,742	0.50	0.000098	3.93	2,545
40.00	0.000014	0.56	17,847	0.25	0.000129	5.17	1,933
30.00	0.000017	0.68	14,627	0.10	0.000203	8.13	1,229
20.00	0.000022	0.87	11,435				

U.S. Environmental Protection Agency Ver. 6.78
 DEEM ACUTE analysis for DISULFOTON (1989-92 data)
 Residue file: DAwosX3.r96 Adjustment factor #2 NOT used.
 Analysis Date: 01-25-2000/16:08:09 Residue file dated: 01-25-2000/06:58:37/8
 Acute Reference Dose (aRfD) = 0.0025 mg/kg body-wt/day
 NOEL (Acute) = 0.25 mg/kg body-wt/day

Females (13-50 years) Daily Exposure Analysis
 ----- (mg/kg body-weight/day)
 per Capita per User

Mean	0.000008	0.000008
Standard Deviation	0.000019	0.000019
Margin of Exposure	31,644	31,573
Percent of aRfD	0.32	0.32

Percent of Person-Days that are User-Days = 99.77%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000001	0.05	184,338	10.00	0.000015	0.62	16,242
80.00	0.000002	0.10	101,608	5.00	0.000021	0.84	11,925
70.00	0.000003	0.14	73,107	2.50	0.000028	1.13	8,834
60.00	0.000004	0.18	56,626	1.00	0.000043	1.74	5,750
50.00	0.000006	0.22	45,375	0.50	0.000060	2.41	4,144
40.00	0.000007	0.27	36,924	0.25	0.000079	3.14	3,181
30.00	0.000008	0.33	29,910	0.10	0.000128	5.13	1,948
20.00	0.000011	0.43	23,438				

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000001	0.05	188,173	10.00	0.000015	0.62	16,254
80.00	0.000002	0.10	102,441	5.00	0.000021	0.84	11,933
70.00	0.000003	0.14	73,434	2.50	0.000028	1.13	8,840
60.00	0.000004	0.18	56,800	1.00	0.000043	1.74	5,753
50.00	0.000005	0.22	45,477	0.50	0.000060	2.41	4,146
40.00	0.000007	0.27	36,986	0.25	0.000079	3.14	3,182
30.00	0.000008	0.33	29,948	0.10	0.000128	5.13	1,950
20.00	0.000011	0.43	23,461				

U.S. Environmental Protection Agency Ver. 6.78
 DEEM ACUTE analysis for DISULFOTON (1989-92 data)
 Residue file: DAwosX3.r96 Adjustment factor #2 NOT used.
 Analysis Date: 01-25-2000/16:08:09 Residue file dated: 01-25-2000/06:58:37/8
 Acute Reference Dose (aRfD) = 0.0025 mg/kg body-wt/day
 NOEL (Acute) = 0.25 mg/kg body-wt/day

Males (13-19 years) Daily Exposure Analysis
 ----- (mg/kg body-weight/day)
 per Capita per User

Mean	0.000011	0.000011
Standard Deviation	0.000020	0.000020
Margin of Exposure	23,341	23,341
Percent of aRfD	0.43	0.43

Percent of Person-Days that are User-Days =100.00%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000002	0.10	101,567	10.00	0.000021	0.84	11,835
80.00	0.000004	0.15	68,717	5.00	0.000029	1.15	8,708
70.00	0.000005	0.20	50,575	2.50	0.000036	1.43	6,982
60.00	0.000006	0.25	39,252	1.00	0.000048	1.92	5,221
50.00	0.000008	0.31	31,883	0.50	0.000063	2.51	3,978
40.00	0.000009	0.38	26,567	0.25	0.000090	3.61	2,773
30.00	0.000012	0.46	21,657	0.10	0.000146	5.85	1,710
20.00	0.000015	0.59	16,878				

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000002	0.10	101,567	10.00	0.000021	0.84	11,835
80.00	0.000004	0.15	68,717	5.00	0.000029	1.15	8,708
70.00	0.000005	0.20	50,575	2.50	0.000036	1.43	6,982
60.00	0.000006	0.25	39,252	1.00	0.000048	1.92	5,221
50.00	0.000008	0.31	31,883	0.50	0.000063	2.51	3,978
40.00	0.000009	0.38	26,567	0.25	0.000090	3.61	2,773
30.00	0.000012	0.46	21,657	0.10	0.000146	5.85	1,710
20.00	0.000015	0.59	16,878				

U.S. Environmental Protection Agency Ver. 6.78
 DEEM ACUTE analysis for DISULFOTON (1989-92 data)
 Residue file: DAwosX3.r96 Adjustment factor #2 NOT used.
 Analysis Date: 01-25-2000/16:08:09 Residue file dated: 01-25-2000/06:58:37/8
 Acute Reference Dose (aRfD) = 0.0025 mg/kg body-wt/day
 NOEL (Acute) = 0.25 mg/kg body-wt/day

Males (20+ years) Daily Exposure Analysis
 ----- (mg/kg body-weight/day)
 per Capita per User

Mean	0.000008	0.000008
Standard Deviation	0.000018	0.000018
Margin of Exposure	30,379	30,350
Percent of aRfD	0.33	0.33

Percent of Person-Days that are User-Days = 99.90%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000002	0.07	143,173	10.00	0.000015	0.61	16,376
80.00	0.000003	0.11	89,880	5.00	0.000021	0.85	11,833
70.00	0.000004	0.15	67,340	2.50	0.000029	1.15	8,696
60.00	0.000005	0.19	53,672	1.00	0.000046	1.82	5,490
50.00	0.000006	0.23	43,589	0.50	0.000065	2.59	3,863
40.00	0.000007	0.28	35,565	0.25	0.000091	3.66	2,735
30.00	0.000009	0.35	28,930	0.10	0.000148	5.91	1,692
20.00	0.000011	0.44	22,833				

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000002	0.07	144,426	10.00	0.000015	0.61	16,380
80.00	0.000003	0.11	90,139	5.00	0.000021	0.84	11,836
70.00	0.000004	0.15	67,454	2.50	0.000029	1.15	8,699
60.00	0.000005	0.19	53,735	1.00	0.000046	1.82	5,492
50.00	0.000006	0.23	43,629	0.50	0.000065	2.59	3,864
40.00	0.000007	0.28	35,590	0.25	0.000091	3.65	2,736
30.00	0.000009	0.35	28,946	0.10	0.000148	5.91	1,692
20.00	0.000011	0.44	22,842				

U.S. Environmental Protection Agency Ver. 6.78
 DEEM ACUTE analysis for DISULFOTON (1989-92 data)
 Residue file: DAwosX3.r96 Adjustment factor #2 NOT used.
 Analysis Date: 01-25-2000/16:08:09 Residue file dated: 01-25-2000/06:58:37/8
 Acute Reference Dose (aRfD) = 0.0025 mg/kg body-wt/day
 NOEL (Acute) = 0.25 mg/kg body-wt/day

Seniors (55+) Daily Exposure Analysis
 ----- (mg/kg body-weight/day)
 per Capita per User

Mean	0.000008	0.000008
Standard Deviation	0.000019	0.000019
Margin of Exposure	32,302	32,254
Percent of aRfD	0.31	0.31

Percent of Person-Days that are User-Days = 99.85%

Estimated percentile of user-days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000002	0.06	154,437	10.00	0.000014	0.57	17,619
80.00	0.000003	0.10	97,716	5.00	0.000019	0.78	12,862
70.00	0.000003	0.14	72,969	2.50	0.000028	1.11	9,033
60.00	0.000004	0.17	58,626	1.00	0.000045	1.78	5,607
50.00	0.000005	0.21	48,100	0.50	0.000067	2.67	3,740
40.00	0.000006	0.25	39,397	0.25	0.000100	4.00	2,502
30.00	0.000008	0.31	32,234	0.10	0.000184	7.38	1,355
20.00	0.000010	0.40	25,215				

Estimated percentile of per-capita days exceeding calculated exposure
 in mg/kg body-wt/day and corresponding

Perc.	Exposure	% aRfD	MOE	Perc.	Exposure	% aRfD	MOE
90.00	0.000002	0.06	156,526	10.00	0.000014	0.57	17,627
80.00	0.000003	0.10	98,143	5.00	0.000019	0.78	12,867
70.00	0.000003	0.14	73,161	2.50	0.000028	1.11	9,037
60.00	0.000004	0.17	58,728	1.00	0.000045	1.78	5,610
50.00	0.000005	0.21	48,164	0.50	0.000067	2.67	3,742
40.00	0.000006	0.25	39,439	0.25	0.000100	3.99	2,503
30.00	0.000008	0.31	32,260	0.10	0.000184	7.37	1,356
20.00	0.000010	0.40	25,231				

ATTACHMENT 6: RDF Files

1.

Asparagus rdf

55%CT

TotalNZ=11

TotalZ=9

0.0045

0.0045

0.0045

0.0045

0.0045

0.0045

0.0045

0.0045

0.0045

0.0045

0.0045

2.

Beans, Succulent 1 for snap beans using FDA 1/2loq

20%CT

TotalNZ=1

TotalZ=4

0.015

3.

Beans, Succulent 2 processed lima beans FDA 1/2loq

10%CT

TotalNZ=1

TotalZ=9

0.015

4.

Beans, Succulent 3 fresh lima beans

50%CT

TotalNZ=1

TotalZ=1

0.015

5.

Broccoli rdf

21%CT

TotalNZ=2

TotalZ=244

0.052

0.014

63,0.0045

6.
Brussels Sprouts rdf
40%CT
TotalNZ=6
TotalZ=9
0.01
0.01
0.05
0.05
0.03
0.04

7.
Cabbage rdf
9%CT
TotalNZ=4
TotalZ=463
0.068
0.163
0.013
0.702
42,0.0045

8.
Cauliflower rdf
25%CT
TotalNZ=1
TotalZ=3
0.0045

9.
Sweet Corn rdf
1%CT
TotalNZ=1
TotalZ=99
0.0045

10
Cotton rdf
8%CT
TotalNZ=8
TotalZ=92
0.05
0.05
0.05
0.05
0.05
0.05
0.05
0.05

11.

Hops rdf

27%CT

TotalZ=73

27,0.075

12.

Lettuce, Head rdf

10%CT

TotalNZ=1

TotalZ=9

0.0045

13.

Lettuce, Leaf rdf

4%CT

TotalNZ=4

TotalZ=831

0.082

0.102

0.014

0.153

31,0.0045

14.

Peas, Succulent rdf

7%CT

TotalNZ=7

TotalZ=93

0.0045

0.0045

0.0045

0.0045

0.0045

0.0045

0.0045

15.

Pecans rdf

4%CT

TotalNZ=1

TotalZ=24

0.05

16.
Peppers, Chili rdf
40% CT
TotalNZ=3
TotalZ=5
0.1
0.05
0.05

17.
Peppers, Sweet rdf
10% CT
TotalNZ=1
TotalZ=9
0.0045

18.
Potatoes rdf whole potatoes
7% CT
TotalNZ=6
TotalZ=1054
0.493
0.114
0.061
0.053
0.053
0.053
73,0.0045

19.
Rice rdf imports only
0.006% CT
TotalNZ=1
TotalZ=16667
0.26

20.
Tomatoes rdf for whole tomatoes
1% CT
TotalNZ=1
TotalZ=99
0.0045

21.

Liver rdf assuming % cows exposed less than Cotton %ct (use for kidney & meat byproducts too)

8% CT

TotalNZ=8

TotalZ=92

0.008

0.008

0.008

0.008

0.008

0.008

0.008

0.008

22.

Meat rdf assuming % cows exposed less than Cotton %ct (use for fat too)

8% CT

TotalNZ=8

TotalZ=92

0.0007

0.0007

0.0007

0.0007

0.0007

0.0007

0.0007

0.0007

23.

Milk rdf assuming % cows exposed less than Cotton %ct

8% CT

TotalNZ=8

TotalZ=92

0.002

0.002

0.002

0.002

0.002

0.002

0.002

0.002

end of rdf files used for disulfoton acute dietary exposure assessment.